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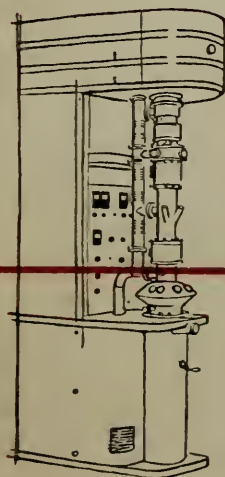
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The Portacaval Shunt for the Relief of Portal Hypertension*

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The Rationale of the Portacaval Shunt

CIRRHOSIS of the liver has become a medical problem of increasing importance in this country due largely to the increased incidence of posthepatitis cirrhosis. The rationale of the portacaval shunt for the relief of portal obstruction was suggested by Nikolai V. Eck, a Russian physiologist, in 1877¹. The first time the procedure was carried out upon a patient was in 1903 by M. Vidal of Angers². The patient lived for fourteen weeks, and died of a septic endophlebitis. De Martel³ in 1910 reported a case in which he had done an Eck fistula. The patient succumbed promptly with anuria. Lenoir⁴, according to Rosenstein, anastomosed the portal vein end to side with the vena cava; this patient likewise died of anuria. Rosenstein⁵ reported a case in 1912 upon whom he had done an Eck fistula for ascites due to cirrhosis. The patient, who before operation had had frequent tapplings for ascites, was markedly improved following operation.

McIndoe⁶ in his studies of the vascular bed in cirrhotic livers found that in perfusing the portal vein, practically all of the fluid escaped through the collateral vessels. Thirteen per cent of the total fluid perfused was the best that could be recovered from the hepatic vein as compared to 100 per cent in the normal liver. The above observations, which have been confirmed by others, further established the rationale of portacaval shunt for relief of the burden of portal hypertension upon an inadequate and overburdened system of collateral vessels.

The additive effects of severe portal obstruction per se upon a liver which is already badly damaged by cirrhosis has long engaged the interests of investigators. The most fruitful approach to this problem has come from studies made upon Eck fistula livers in dogs.

The Eck fistula liver is prepared by making a large side to side anastomosis of the portal vein with the vena cava, followed by ligation

and crushing of the portal vein just as it enters the liver. The procedure results, therefore, in a complete diversion of portal blood from the liver.

Probably no one has had more experience with constructive analysis in the study of Eck fistula dogs than has Dr. George H. Whipple. He and his co-workers have recently reported⁷ long term studies, and carefully analyzed data on the metabolism of hemaglobin and protein in normal and in depleted Eck fistula dogs. Some of the animals were studied for long periods, as many as eight years, maintained in apparent health. They appear normal in all respects, activity, appetite, digestion and weight, but occasionally they may show increased thirst, diuresis, a trace of jaundice or lack of appetite and vague intoxication, evidences of disturbed protein metabolism. Their studies showed that the Eck fistula liver was subnormal in producing hemaglobin and plasma proteins, but in no instance, upon microscopic study of the liver, could any significant fibrosis be demonstrated.

The above studies would seem to indicate that portal obstruction per se, with complete diversion of portal blood flow, may play a role in the depression of serum proteins in cases of cirrhosis of the liver, but perhaps a relatively minor role. The above conclusion seems all the more likely when one considers that in cases of severe portal hypertension due to extrahepatic portal block, the liver function and chemistry tests are characteristically normal. Furthermore, careful microscopic studies of sections of the liver in such cases regularly fail to disclose any evidence of cirrhosis.

The Syndrome of Portal Bed Block

Cases of portal hypertension are classified in two groups in respect to the site of obstruction in the portal bed: Group I—those having intrahepatic portal block; and Group II—those having extrahepatic portal block. Whether the site of portal block be intrahepatic or extrahepatic it gives rise to a fairly typical syndrome which is frequently referred to as Banti's syndrome. This syndrome consists of a variable secondary anemia, a leucopenia, a thrombocy-

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topenia, a splenomegaly and a tendency to repeated severe gastrointestinal hemorrhage, most frequently associated with ruptured esophageal varices. The spleen shows the pathological picture of congestive splenomegaly. The liver may be cirrhotic or normal in accordance with whether the site of the portal bed block is intrahepatic or extrahepatic.

The Diagnosis of Portal Hypertension

The effects of severe portal hypertension are often so dramatic as not to make the diagnosis difficult, namely, the history of sudden gastrointestinal hemorrhage with subsequent demonstration of esophageal varices by x-ray.

Patients may have portal hypertension of sufficient severity to cause congestive splenomegaly without giving a history of gastrointestinal bleeding. In some of these cases, it is not possible to demonstrate esophageal varices by x-ray. Such cases usually present the secondary anemia, leucopenia and thrombocytopenia of Banti's syndrome. The differential diagnosis from other splenomegalies is determined by accurate hematologic studies.

For technical and other reasons it is important to determine whether the portal hypertension is secondary to intrahepatic or extrahepatic portal bed block in a given case. The presence of intrahepatic portal block can almost invariably be detected by the accurate employment of liver function and chemistry tests. If there is no evidence of liver disease the site of the portal block is extrahepatic.

In cases of congestive splenomegaly secondary to extrahepatic portal block, the obstruction is found to be frequently in the portal vein itself, the result of atresia or cavernomatous transformation. Splenic vein obstruction is a less frequent cause of congestive splenomegaly and congenital arteriovenous aneurysm of the splenic artery and vein is a rare cause. It is not possible to determine the exact site of obstruction in all cases even at operation. Differential portal pressure readings can be taken from a known branch of the superior mesenteric vein and the splenic vein to rule out obstruction in the portal vein itself. If the portal pressure reading taken from a branch of the superior mesenteric is normal, and a reading made on the splenic vein is abnormally high, the site of the obstruction is in the splenic vein. In the latter case it is important to take one additional portal pressure reading, namely, from a known branch of the coronary

vein. The importance of this will be discussed subsequently.

The Treatment of Portal Hypertension

Portal hypertension secondary to portal bed block, both intrahepatic and extrahepatic, associated with Banti's syndrome poses the problem to be considered in this discussion.

The rationale of the portacaval shunt for the relief of portal hypertension has been discussed. In the belief that advances had taken place in surgery which may have a bearing upon the clinical success of portacaval shunts, Dr. Allen Whipple and I undertook a restudy of the problem in 1943. In our early cases, the non-suture method employing a vitallium tube was used⁸. Gradually a series of cases was expanded using both the non-suture and the suture techniques.

Two types of portacaval shunts were commonly employed, namely, anastomosis of the portal vein to the vena cava and anastomosis of the splenic vein to the left vein, following splenectomy. Each of these types of portacaval shunts proved capable of diverting a sufficient volume of portal blood to lower substantially by actual measurement, the portal pressure in cases having portal hypertension. The portal vein to vena cava anastomosis has, in our experience, regularly resulted in the complete disappearance of any evidence of esophageal varices demonstrable by x-ray. Esophageal varices are made to disappear in some cases following the use of the splenorenal type of portacaval shunt; in others the size of the varices, as demonstrable by x-ray, are noted to be smaller, and in some there may be no detectable change following operation.

The portacaval shunt of either type has invariably relieved ascites when present. The recurrence of gastrointestinal hemorrhage has been prevented in all cases in which the portal vein to vena cava anastomosis was employed and in the great majority of the cases in which the smaller, splenorenal anastomosis has been employed. Failure of the splenorenal shunt to afford complete protection against the occurrence of hemorrhage in a few cases is ascribable to two causes: 1) failure of the shunt to remain patent, and 2) inadequacy of size of shunt to by-pass enough blood to reduce the portal pressure to a point affording complete protection against hemorrhage under all conditions of activity. The above are shortcomings inherent to the use of the splenic vein and not

encountered when the larger, more substantial portal vein is employed in effecting a portacaval shunt.

Indications for Portacaval Shunt in Portal Hypertension Due to Extrahepatic Portal Bed Block

There are occasional cases of congestive splenomegaly in which the seat of obstruction is in the splenic vein. Whether portal hypertension in such cases will be confined to the spleen or include the system of coronary veins of the stomach (which in turn inosculate with the esophageal veins) will depend upon the junction of the coronary vein with the splenic vein in relation to the site of obstruction in

junction of the coronary vein or if the latter joins the portal vein, hypertension is confined to the spleen and splenectomy alone will cure the patient. If, on the other hand, the coronary vein should join the splenic vein at a point distal to the site of block in the splenic vein, splenectomy alone will not reduce the pressure in the coronary system of veins to normal and the patient will be liable to hemorrhage subsequently from esophageal varices. In the latter type of case, the splenectomy should be followed at the same operation with the establishment of a splenorenal shunt.

Failure to recognize the above situation, or failure on the part of the surgeon in being

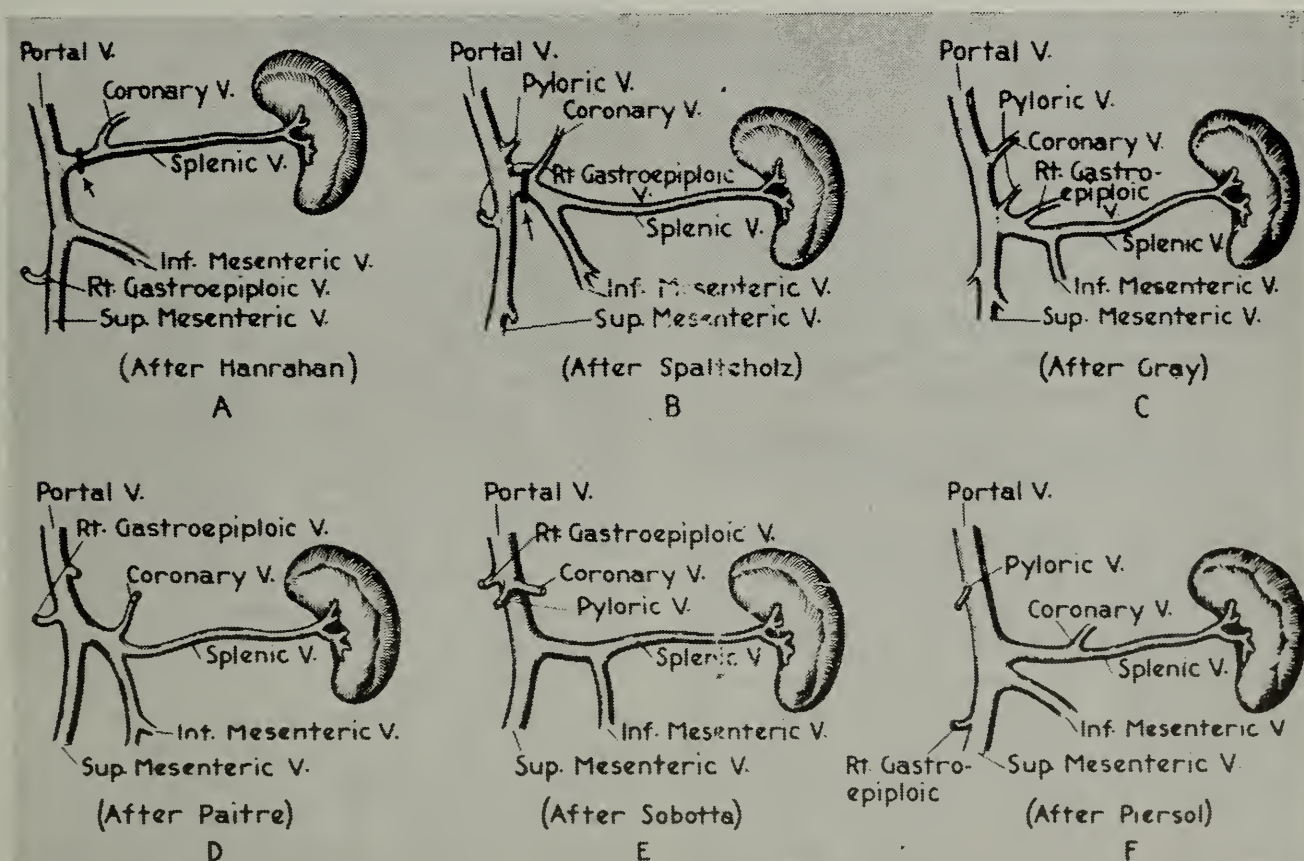


Fig. 3.—Variations in the anatomical pattern of the portal system illustrating how an obstructive factor of the same site in different individuals may result in marked differences in clinical behavior.

Figure I—Drawings to illustrate the varying anatomical pattern of the portal radicals particularly in respect to the coronary vein. Since branches of the coronary vein inosculate with the esophageal

veins, the point of junction of the coronary vein in relation to the site of obstruction becomes all important. (Courtesy of L. M. Rousselot)

the splenic vein. Figure I illustrates variations in the anatomical pattern in special relation to the coronary vein. It is noted that in four of the six illustrations the coronary vein is pictured as joining the splenic vein. If the site of block in the splenic vein is distal to the

prepared to do a shunting anastomosis at the time, may rob the patient of his chance of cure by destroying the one vein, the splenic vein, upon which a successful anastomosis in such cases may depend. The mistake of taking the spleen out and failing to recognize the

necessity of doing a splenorenal anastomosis at the time can be positively avoided by simply taking a portal pressure reading from a known branch of the coronary vein. The very great importance of conserving the splenic vein for anastomosis purposes is enhanced by the fact that in the great majority of the cases of portal hypertension due to extrahepatic portal block, the seat of the obstruction is in the portal vein. The pathology in such instances is that of atresia or cavernomatous transformation—either condition an absolute contraindication to attempted use of the portal vein for anastomosis purposes.

I should like, at this point, to call attention to a rare and interesting condition which does cause extreme congestive splenomegaly with hypertension throughout the portal system but which can be cured by splenectomy without resort to a shunting procedure. I refer to the condition of congenital arteriovenous aneurysm of the splenic artery and vein. Splenectomy with careful attention to the removal of all of the arteriovenous shunts will return the portal pressure to normal and cure the patient.

Indications for Portacaval Shunt in Portal Hypertension Due to Intrahepatic Portal Block

Our discussion will deal primarily with portal hypertension secondary to cirrhosis of the liver.

Great strides have been made during the past decade both in the detection and the medical treatment of cirrhosis of the liver. Nevertheless, the occurrence of gastrointestinal hemorrhage and the persistence of wasting ascites continues to be a serious problem in this disease. The relationship of progressive periportal fibrosis to the development of portal hypertension during the natural history of Laennec's cirrhosis has long been understood and requires no further emphasis. The association of portal hypertension with the occurrence of hemorrhage and ascites in cases of cirrhosis of the liver has likewise been long accepted as fact. Whereas the fact remains that portal hypertension is the basic cause of severe gastrointestinal bleeding in cases of cirrhosis, more recently prothrombin derangement, as it affects blood clotting, has been accepted as a co-factor in inciting or prolonging hemorrhage under certain conditions. Similarly, the relationship of the blood proteins, particularly the albumin content, as a factor in ascites is better understood.

Prothrombin derangement (deficiency) may result from two causes: 1) failure to absorb vitamin K; 2) inability of the liver to make adequate amounts of prothrombin. The former occurs in conditions affecting biliary obstruction in which the triad of jaundice, alcholic stools and a high alkaline phosphatase are familiar. The latter occurs in serious decompensation of the liver. In cases of suspected cirrhosis of the liver with jaundice who have an elevated prothrombin time, it may be informative to note the effect of the administration of vitamin K parenterally upon the prothrombin time.

Liability to sudden, massive gastrointestinal hemorrhage secondary to portal hypertension constitutes a grave danger to the cirrhotic patient. The modern medical regimen employed in the treatment of cirrhosis of the liver has not lessened the incidence or the hazard of lethal hemorrhage. Ratnoff and Patek⁹ in 1942 reported on a series of 386 cases of cirrhosis cases who had not been treated with a liver diet or other special measures. In this series, the incidence of hematemesis was 27.4 per cent and the incidence of death from ruptured esophageal varices was 26 per cent. Whereas, in a series of 124 cases receiving the modern medical treatment under especially favorable conditions, Dr. Arthur Patek¹⁰ tells me the incidence of hematemesis was 33 per cent. Furthermore, twenty-two of the forty-four cases having hematemesis in the treated group died of hemorrhage; 50 per cent of them died within one year of the onset of their first hemorrhage.

A realistic appreciation of the above statistics makes it imperative that those of us responsible for the care of cirrhosis cases recognize our obligation of protection against lethal hemorrhage. The portacaval shunt is a direct method of lowering portal hypertension and thus removing the hazard of sudden death from hemorrhage.

Figure II shows x-rays of the esophagus following a barium swallow in a 39-year-old woman with cirrhosis of the liver. For more than a year this patient had suffered from recurring, massive hematemeses. The attacks of hemorrhage had become progressively more frequent to the point that for four months prior to operation, the interval between hematemeses had become reduced to fourteen days. Since the establishment of a side to side anastomosis of the portal vein to the vena cava there have been no episodes of gastrointestinal

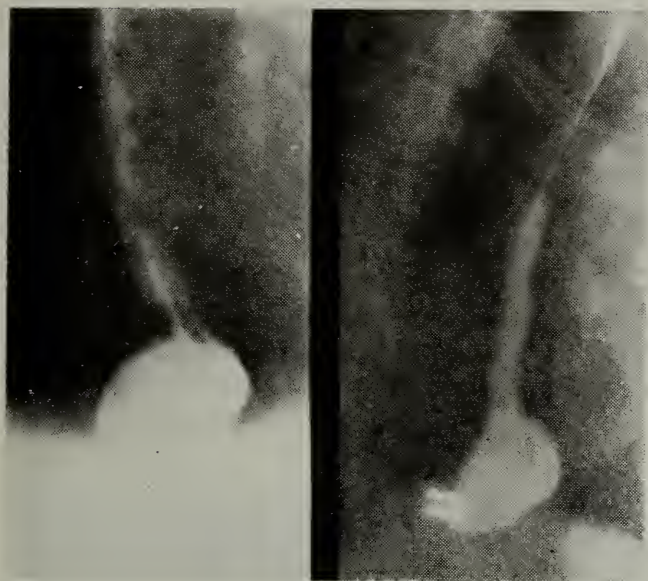


Figure II—X-rays of the esophagus following a barium swallow. Left, before operation. Right, three weeks following operation.

hemorrhage. Note the effect of reducing portal hypertension upon esophageal varices. The x-ray on the left, taken before operation, shows extensive varices. Whereas the x-ray on the right taken three weeks following operation shows complete disappearance of the esophageal varices.

The demonstration of the presence of esophageal varices in a case of cirrhosis of the liver is concrete evidence of the pressure of a severe grade of portal hypertension. Such cases are in imminent danger of massive hematemesis and are candidates for the portacaval shunt procedure.

It is routine with us to take readings of the portal pressure at operation. The portal pressure readings in some forty odd cases of cirrhosis averaged higher by 50 mm. of water pressure than was the average for readings taken upon cases of portal hypertension due to extrahepatic portal bed block. The above fact strongly disposes us to prefer using the larger portal vein to the splenic vein in effecting a portacaval shunt upon cirrhosis cases. A portal vein to vena cava anastomosis, whether it be of the end to side or side to side variety, regularly reduces the portal pressure to within normal limits, as is further evidenced by the disappearance of esophageal varices following operation.

When Is Ascites an Indication for the Establishment of a Portacaval Shunt in Cases of Cirrhosis of the Liver?

The most outstanding achievement of the modern medical regimen in the treatment of Laennec's cirrhosis of the liver has been the high incidence of the relief of ascites. In such success the ascites is related to depressed liver function in particular respect to the formation of albumin and the ascites disappears *par passu* with improvement of liver function in respect to a rise in the serum albumin level.

With due credit to the achievements of the modern medical regimen in the treatment of cirrhosis of the liver there are many treatment failures; particularly is this true in cases of post hepatitis cirrhosis. Cases of failure to clear ascites following a vigorous and prolonged treatment régime is usually due either to failure to regain liver compensation in the presence of a too severely damaged liver or due to the presence of excessive portal hypertension. The presence of a portal hypertensive component in the formation of ascites is strongly suspected in cases whose serum albumin level responds to an energetic dietary régime but, rising to three or more per cent, there is failure to clear the ascites. The demonstration of the presence of esophageal varices by x-ray in these cases would be confirmatory evidence of excessive portal hypertension. Such cases are candidates for the portacaval shunt. They are good operative risks, and to continue indefinitely with a medical régime exposes them to the dangers of chronic wasting ascites.

The Selection of Cases for Portacaval Shunt

Cases of portal hypertension due to extrahepatic portal block are almost invariably excellent operative risks. The liver is functionally normal in such cases so they do not constitute a problem in selection. The preoperative correction of anemia so characteristic of these cases, is of course important.

In respect to the selection of cases of cirrhosis of the liver for the shunting procedure much can be said. It is fortunate indeed, however, that the great advances in protective and supportive measures for the impaired liver; advances in anesthesia and the prevention of shock enables the surgeon of today to carry out successfully the shunting operation with reasonable risk to the patient.

It may be said at the outset, in respect to the different types of cirrhosis commonly as-

sociated with portal hypertension, that cases of cirrhosis secondary to schistosomiasis are better operative risks. This is because of the fact that there is generally comparatively less impairment of liver function in this type of cirrhosis.

There are many factors involved in the selection of cirrhosis cases for the portacaval shunt. Since the surgeon is held responsible for the outcome of the operation, the responsibility is his for the selection of cases for operation.

Of ranking importance is a thorough knowledge on the part of the surgeon of the natural

history and the vagaries in clinical behavior of the cirrheses. He should be sufficiently grounded in gross pathology to recognize at a glance the general characteristics of Laennec's cirrhosis versus posthepatitis cirrhosis. An appreciation of the microscopic appearance of the liver in acute or subsiding hepatitis in its relation to the flocculation tests as it affects a choice of the time to operate should be his. Finally, he should possess a knowledge of the correlation of liver chemistry and function tests with the clinical status of the patient in the evaluation of operative risk.

The selection of cases of cirrhosis for the

NUMBER	LIVER CHEMISTRY (PREOPERATIVE)	COMMENT (POSTOPERATIVE COURSE)
I DUNCAN (767171)	CEPH. FLOC. = 4+, SERUM ALB. = 2.9%, GLOB. = 3.7, S. BILIRUBIN = 2.7 MG.%, SERUM PHOSPHATASE = 9.5 B.U.%, BROM- SULPHALEIN RETENTION $\frac{1}{2}$ HR. = 70%.	ANOREXIA, WEAKNESS, TEMPORARY RECURRENCE OF ASCITES.
II SCHEIN- GARTEN (850996)	CEPH. FLOC. = 3+, SERUM ALB. = 3.3%, GLOB. = 5.2%, S. PHOSPHATASE = 10.7 B.U.%, S. BILIRUBIN = 1.9 MG.%, HIPURIC ACID EXER. = 0.8 GM., BROM- SULPHALEIN RETENTION $\frac{1}{2}$ HR. = 42%	ASCITES REAPPEARED RE- QUIRING ONE PARACENTESIS. WOUND DISRUPTED.
III ABRAMS (868165)	CEPH. FLOC. = 3+, SERUM ALB. = 3.5%, GLOB. = 2.9%, S. PHOSPHATASE = 6.1 B.U. %, S. BILIRUBIN = 1.3 MG.%, BROM- SULPHALEIN RETENTION 45 MIN. AFTER INJECTION = 23%. PROTHROMBIN TIME 50% OF NORMAL	ASCITES REAPPEARED TRANSITORY.
IV RUBIC (900615)	CEPH. FLOC. = 4+, THYMOL TURBIDITY = 4+, SERUM ALB. = 3%, GLOB. = 2.9%, S. BILIRUBIN = 3.6 MG.%, SERUM PHOSPHATASE = 3.9 B.U.%, GALACTOSE REMOVAL CONSTANT = 2.1, BROMSULPH. RETENTION 45 MIN. = 37%. PROTHROMBIN TIME 60% OF NORMAL.	ASCITES OCCURED ON 3rd POSTOPERATIVE DAY REQUIRING ONE PARA- CENTESIS.
V JACOLETTI (764905)	CEPH. FLOC. = NEG., SERUM ALB. = 2.9%, GLOB. = 2.3%, SERUM PHOSPHA- TASE = 3 B.U.%, BROMSULPHALEIN RE- TENTION $\frac{1}{2}$ HR. = 35%.	ASCITES RECURRED AND PERSISTED FOR SEVERAL MONTHS, FINALLY DIS- APPEARING AS THE SERUM PROTEINS ROSE.
VI SALLMON (817310)	CEPH. FLOC. = NEG., SERUM ALB. = 3%, GLOB. = 2.3%, S. BILIRUBIN = 2.5 MG.%, S. PHOSPHATASE = 4.6 B.U. %, BROMSULPHALEIN RETENTION $\frac{1}{2}$ HR. AFTER INJECTION = 40%.	ASCITES REAPPEARED BUT PROVED TRANSITORY. BE- CAME MORE JAUNDICED FOR A WEEK POSTOPERATIVELY.
VII LONG (783972)	CEPH. FLOC. = NEG., SERUM ALB. = 2.3 %, GLOB. = 3%, S. PHOSPHATASE = 10.2 B.U.%, HIPURIC ACID EXCRE- TION = 0.6 GM., BROMSULPHALEIN RE- TENTION $\frac{1}{2}$ HR. = 40%.	ANOREXIA, WEAKNESS. RECURRENCE OF ASCITES REQUIRING ONE PARACENTESI ON 8th POST OP DAY.

Figure III—A table showing the preoperative liver chemistry and postoperative comments upon seven cases of severe cirrhosis of the liver.

portacaval shunt procedure brings into focus the importance of accurate preoperative evaluation of the extent of liver damage and its functional capacity in a given case.

An analysis of many cases of cirrhosis of the liver in which the portacaval shunt was established affords some opportunity of correlating the preoperative evaluation of the status of the liver with its postoperative behavior. It became early apparent in the series that no single liver test employed by us afforded consistently adequate information upon which to predicate the behavior of the liver postoperatively.

To present an overall perspective of the relative values of the different liver tests employed in terms of postoperative behavior of the liver, I have selected seven cases who presented unmistakable clinical evidence in their postoperative convalescence of further depression of liver function. Figure III shows the preoperative liver studies and postoperative comments on the seven cases. The occurrence of ascites in a case whose portal hypertension has been relieved by the establishment of a shunt is interpreted by us to mean unmistakable evidence of depression of liver function.

The array of liver studies in the different cases impresses one of the importance of no single test to the exclusion of others. This is best illustrated by the cephalin flocculation reaction which is strongly positive in four cases and totally negative in three. A positive cephalin flocculation test is taken by many observers to mean active liver cell damage. To us it has served as a warning of the possible presence of hepatitis. Each of the four cases having strongly positive cephalin flocculation tests were jaundiced. The cirrhosis was considered to be secondary to virus hepatitis in the cases having strongly positive reactions, and the three cases having a negative test are considered to have Laennec's cirrhosis.

Any positive advantage of the negative cephalin flocculation reaction in cases V, VI, VII, would seem to be offset by the marked impairment on the part of the liver to excrete bromsulfalein and the extremely low serum albumin percentage.

In summary we may say that the liver evaluation tests showed throughout the most impairment in Case IV, and by all odds, she had the stormiest postoperative course with the exception possibly of Case V.

The inability on the part of the liver to make adequate amounts of albumin and excrete bromsulfalein were the most consistent findings throughout the series of seven cases. The quickest postoperative deaths from liver failure in our experience occurred in two cases each of whom preoperatively had a serum albumin level of 2.4 per cent. One of the cases had a deep unremitting jaundice and the other had a bromsulfalein retention of 40 per cent one-half hour after injection.

Our experience in general would indicate that cases having a serum albumin level consistently under 3 per cent with bromsulfalein retention in excess of 35 per cent one-half hour after injection are not good operative risks. Cases of post hepatitis cirrhosis in the above category would, however, in our opinion, have a wider margin of safety.

Preoperative Preparation and Postoperative

Handling in the Poor Risk Patient

At the outset we want to emphasize that the shunt operation under no circumstance should be attempted as an emergency procedure for the control of hemorrhage. Transfusions and esophageal tamponage are the emergency measures to be employed in the saving of life from acute massive hemorrhage. With both of these methods available for emergency use in every hospital, positively no lives should be lost, providing the patient arrives at the hospital in a living state. In our experience, a properly designed esophageal balloon mounted upon a double lumen nasogastric tube when properly introduced affords, when the balloon is inflated to 25-30 mm. of mercury, instantaneous cessation of hemorrhage. There is no room for doubt as to the control of bleeding; when the saline gastric washings become clear the bleeding has ceased. Under sedation the average patient tolerates the tube well. We have had patients come to the hospital sometimes from distances up to several hundred miles with the tube still in position.

Even with the excellent emergency methods at hand for the control of acute massive hemoatemesis there are cases in which this is not enough. I refer to the sizable group of cirrhosis cases who, because of excessive portal hypertension, bleed so frequently and severely as to constitute constantly an imminent threat of death. The latter transcends all other considerations. The bleeding in such cases must be controlled by temporary measures until the

patient can be brought into satisfactory protein and electrolyte balance pursuant to the establishment of a portacaval shunt. The latter is the only hope for these cases and it is amazing the high percentage of them who do get by with the procedure. For example, in an analysis of sixty-one cases of cirrhosis, there were fifteen cases (20 per cent) belonging to the above desperate group. Though the postoperative convalescence was stormy in many, thirteen of the fifteen cases survived. This is a tribute indeed to the great advances that have been made in the protective and supportive measures for the badly damaged liver.

In the average case, whose preoperative preparation is not complicated by recurring hemorrhage, it is not necessary to give multiple transfusions of whole blood or albumin. Occasionally there are cases with marked secondary anemia and thrombocytopenia in which a transfusion or two is indicated preoperatively. Such cases usually have considerable enlargement of the spleen.

It is exceedingly important to 'stroke up' the prospective candidate for operation for several weeks prior to operation with a very high daily intake of proteins and carbohydrates and make sure that he has an appetite to eat it. It is well known that cases of cirrhosis, particularly of the post hepatitis variety, are prone to have, from time to time, acute "flare ups" of the disease process going on in their livers. These episodes are usually marked by a lag in the appetite and a feeling of tiredness. They may be punctuated by the occurrence of slight jaundice, vague digestive disturbances or even epigastric discomfort. Under such circumstances, the liver may even become tender and a little larger than before—this is no time to operate and one quickly gets a serum bilirubin and a cephalin flocculation test to confirm such a suspicion.

In preparation for operation the average patient can be gotten up to a daily intake of 200 to 300 grams of protein; 300 to 500 grams of carbohydrates; 50 to 100 grams of fat making a total caloric intake up to 2500 to 4000 calories. Such a diet should include lean meat two or three times a day; milk four to six glasses, cottage cheese in abundance, eggs, vegetables and fruit juices. The protein and carbohydrate intake may be further boosted by the use of between meal reinforced milk drinks. In our experience so far, the best

tolerated prepared protein is "protinal," made by the National Drug Company of Philadelphia. With this product some twenty-seven additional grams of protein can be added to each glass of milk.

Care is taken that there is an adequate daily intake of vitamins particularly the B complex group. Whole, unfractionated liver extract is given in 3 cc. doses intramuscularly three times a week; in desperate cases "Intrahepatol" intravenously is indicated.

When it comes to pass that the best possible serum protein level is established and the patient preferably gaining weight, a date may be set for the operation.

At operation, the best possible protection to the liver is afforded by the avoidance of shock and anoxia. The above is best accomplished in our experience with good cyclopropane anesthesia, careful hemostasis and the avoidance of blood pressure recession by adequate blood replacement throughout the operative period.

Postoperatively, the general scheme is to get the patient back quickly on a substantial dietary intake. In the interim infusions of glucose and saline are used. Frequent hematocrit determinations will indicate the necessity for further transfusions. If the serum proteins are desperately low, human albumin, given intravenously, is an important adjunct.

The urine output and the serum non-protein nitrogen level is carefully watched because in the really serious liver risk patients, an approaching anuria with elevation of the N.P.N. may be our earliest warning of an impending cholemia. On the third postoperative day, an albumin, globulin determination is made, the serum bilirubin is determined and a cephalin flocculation test is done.

The patient is given large doses of liver extract and vitamins parenterally for the first few days postoperatively. Prostigmine and a rectal tube are administered at four hour intervals to prevent distension. Early ambulation to the extent of walking around the bed two or three times daily is practiced in suitable cases.

Postoperative Results Following the Portacaval Shunt

To date, the portacaval shunt operation has been accomplished by us eight times. In spite of errors in judgment and technical errors in the developmental stage, the over-all operative mortality is under 18 per cent. There were only

two postoperative deaths in twenty-two cases of Banti's syndrome secondary to extrahepatic portal block.

We are now employing more often the portal vein to vena cava type of portacaval shunt, using a thoraco-abdominal approach for cirrhosis cases. It is of interest that in twenty-one cases in which the portal vein has been anastomosed to the vena cava, there were only two postoperative deaths, under 10 per cent. Figure IV illustrates this technique.

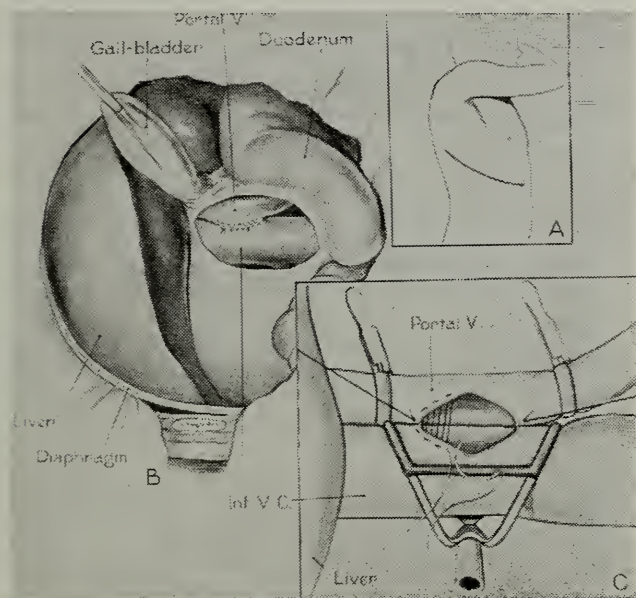


Figure IV—An illustration of the technic for side to side anastomosis of the portal vein with the vena cava.

Of the twenty-two cases operated upon for portal hypertension secondary to extrahepatic block, there is a follow-up history of recurrence of bleeding since discharge from the hospital in six cases. In five of the six cases, the spleen had been removed at a previous operation. This necessitated the employment of a smaller vein in effecting a shunt. (The portal vein, because of its involvement at the site of portal obstruction, could not be used in any case.) The above figures strongly condemn a practice of failure to make use of the splenic vein in establishing a splenorenal shunt at the time a splenectomy is done in such cases. It is a fact, however, that in three of the six cases in which hemorrhage has recurred, the frequency and severity of the hemorrhages have been markedly reduced. In two of the cases the shunt has been proved to be closed.

Of sixty-one cases operated upon for the relief of portal hypertension due to intra-hepatic portal block, there has been recurrence

of bleeding following discharge from the hospital in five cases. In none of the five cases had a direct portal vein to vena cava type of portacaval shunt been employed. In one case, the splenorenal shunt was proved to be open at necropsy. The bleeding had occurred throughout the gastrointestinal tract and from the kidneys secondary to hypoprothrombinemia due both to failure to absorb vitamin K (she had complete obstruction of the common duct by calculi) and liver failure. Liver failure with hypoprothrombinemia was a terminal factor in another case. In one case of recurring hemorrhage, the patient was reoperated upon at which time a portal vein to vena cava type of portacaval shunt was established. Following this operation, there was complete disappearance of the esophageal varices by x-ray.

Summary and Conclusions

The portacaval shunt is presented as a rational procedure for the relief of portal hypertension secondary to portal bed block. The anastomosis constitutes a low pressure by pass connecting the portal and caval systems of veins through which a large volume of portal blood may be shunted directly, thus lowering the portal pressure in overburdened collateral veins.

The syndrome of portal bed block is the same whether the site of the obstruction be intra or extrahepatic namely: a variable secondary anemia, leucopenia, thrombocytopenia and splenomegaly.

The importance of taking differential portal pressure readings in cases of portal hypertension secondary to extrahepatic portal block to indicate the necessity for the establishment of a portacaval shunt in a given case has been stressed.

Two types of portacaval shunt are commonly employed, namely, anastomosis of portal vein to the vena cava and anastomosis of the splenic vein to the left renal vein following splenectomy. Each of these types of portacaval shunts proved capable of diverting a sufficient volume of portal blood to lower substantially the portal pressure. The portal vein to vena cava anastomosis is preferable in cases of cirrhosis of the liver because of its larger size and the fact that a more severe grade of portal hypertension is encountered than is the case with patients having portal hypertension secondary to extrahepatic portal block.

The portacaval shunt of either type has regularly relieved ascites when present. The

direct portal vein to vena cava anastomosis has invariably prevented the recurrence of hemorrhage. This is because the shunt is of a sufficient size to reduce the portal pressure to within normal limits. The splenorenal type of portacaval shunt, though of a smaller size, has afforded protection against the recurrence of hemorrhage in over 90 per cent of the cases. In some of the cases who have bled postoperatively the frequency and severity of the attacks of bleeding has been markedly reduced; in most instances limited to the passage of one or more tarry stools.

Conclusions: With all possible technical improvements the operation will remain a tedious one, but with careful pre-operative preparation and postoperative handling the procedure can be accomplished with a reasonable risk.

The important point we have demonstrated is that the portacaval shunt is a rational and effective procedure for the relief of ascites and hemorrhage when due to portal hypertension. Aside from this there has also been marked clinical improvement in many of the patients

with a demonstrable improvement in liver chemistry in some.

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Our Heritage and Our Future

President's Address

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IT HAS been a great pleasure to serve you as your president for the past year; to study and work for the needs of our association. It has been my pleasure and privilege to visit many of the local societies, meet many old friends and make new ones. It is particularly interesting to see so many young men interested in the progress of organized medicine, and to see the older physicians enthusiastic with their work. It has inspired me to determine to give always my best to our profession so long as I may live and try to help keep and maintain the high level that our profession has always maintained.

May I say to you as medical men that we have a wonderful heritage given us free by those true and tried faithful doctors who paved the way before us. What are we going

to do with it? Are we trying to hold to what they gave us through great difficulty and hardships, and build a greater profession for those that will follow our day? The doctors for the past century have written one of the greatest histories ever written in medicine, not only in Mississippi, but the whole nation; not on pages, but in their lives to suffering humanity with untold hardships and meager facilities to work with in fighting many diseases that are as history to you younger men and many of us who are older. What could we do today if we were set back fifty years? Could we do even as well? The physicians have labored long and hard to build a foundation, not all together for their day, but future generations. Through study and research and improved skill, effective and useful remedies have been found to relieve much of the suffering of the human body, and this better knowledge of human suffering and prevention of diseases, the future is much brighter for those who fol-

*Delivered at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11, 1949.

low us. While we study these signs of advancement and research, it is interesting but difficult to explain that any upheaval tends to reanimate the doctor. Also the greater the earning the more outstanding and far-reaching the research; the more eager are men to work and learn. An example: During the First World War insulin was discovered; in World War II, penicillin, streptomycin and DDT gave us the greatest means of fighting infection. DDT has in so short a time almost eradicated the household fly and the mosquito, with malaria and many of the diseases and infections spread by the household fly almost disappearing. Technical methods and types of surgery have seen such marvelous development the dread of operations has almost passed.

With all the obstacles that have been placed in the path of progressive medical science, we have been able to by-pass and fight on until today we claim many of the greatest brains of the world, successes that have led from one field to another. Although cancer, tuberculosis, polio and many other diseases are not yet conquered, much more progress will come soon. We have passed the day of superstitions. As an example: We know that in India the plague that claimed three out of five children between the ages of two and five was only a sun stroke. When the mothers learned to put a cap of green leaves on the children's heads when out at play, they were not stricken. We are glad the day of superstitions has passed and that medical men throughout the centuries have recounted the achievements of their predecessors and have contributed their every effort to the progress of medical science. We can say with pride that we have made progress that has not been equalled by any other scientific profession or organization.

A few years ago I was present at a luncheon given in honor of the late William Mayo and when questions were asked, one was "To what do you attribute the success of the Mayo Clinic?" The answer was, "When we are at home everyone in our clinic knows that we will be in our place of work at 7:30 a.m. each morning ready for work and will stay until the day's work is done." The other was, "How would you classify doctors?" The answer was, "Balanced and unbalanced. The balanced can see the medical needs and surgical needs of his case. The unbalanced can only see the medical or the surgical size of his case." I am afraid that today we are training too many unbalanced

men. In other words, the best teaching and experience is not sufficient. Our teaching should carry our young men to a broader and more comprehensive knowledge of the medical science from general practice to difficult techniques. Our pharmaceutical houses with their chemists are placing an average of twenty-seven known preparations on the market every day. We have ample ammunition to fire with and correct every human ailment in the human body, but we are not able to pronounce the names of these preparations. We are lost and the medical men can only pray that Congress, while studying hard to help the medical profession in such a big way, pass a uniform law of names for these remedies.

We look with pride upon the progress of medicine in Mississippi when we look at the reduction in the incidence of diseases and the death rate from preventable diseases, especially of infants and maternal deaths. We are justly proud of the work of the physicians and the State Board of Health and the understanding of both in carrying on the most effective way to lower the mortality rate. Yet we are not satisfied; we are making greater efforts today than ever before and will continue to improve and show greater progress in the years to come with more mothers being cared for by physicians and more deliveries in the hospitals. We have definitely shown greater progress, most of at the hands of the general practitioner.

A great scholar once said, "History that is written can not be recalled, but that which you have not written can be recalled." I am afraid that much of the history that has been written by these men who are truants of medicine in these years is being by-passed by the great flood of new discoveries and research possibilities; and crowded out by other things taught in our schools of today. We know that a medical foundation must be firm to stand the storms of our medical career. The trend of the teaching of today is toward hospital practice and basing all work on pathological findings. We seem to overlook the functional disturbances that must have medical attention and that the practice of the trainee is in the hospitals. We overlook the fact that much work must be done in the home.

The physician and the public are partners and one depends on the other; the better the understanding, the better the social contact; and service rendered. The chances of staying out of politics are much brighter when we be-

come men of reason, men of courage, men of integrity, men of ingenuity, men of patience, men of generosity, men who love their fellow-men, and who are conscious of the guidance of the Great Divine.

We are glad that the doctors of our state are not boastful. As a rule, they are too busy to seek publicity, but a review of our state shows that doctors have financed most of the hospitals. They have brought service and even hospital care out to the people. Today we have well-equipped and well-staffed hospitals within forty miles of anyone who needs hospital care. This can not be said of any other state in the union. Our doctors are not so regimented that home service can not be had, yet in some instances we hear the complaint that it is hard to get a doctor to make a call. This we cannot deny, but also we can not help a black sheep being born black. I am glad that in some of our medical schools we now have general practitioners clubs formed in the student body that are growing, being encouraged and helped by the faculty. Our need for more doctors is acute, yet we are making progress. May I urge that you put forth every effort for our four-year medical school which will be a reality in the near future to serve the medical needs in Mississippi as no other factor.

We believe that we have one of the finest groups of young men who are in medical training to be found anywhere, men whom we are willing to put our faith in to carry on the true principles of organized medicine. I know that this body of medical men will hand it to them clear and unblemished. This is our chance to have more medical men, more general practitioners—this group of doctors that cares most for the illness of the people. We have specialists who rank with the best. We want to continue to train men in special work so that every known ailment can be treated at hospital or home. I have heard many comments this year that the people of Mississippi are getting the best medical care of any state in the Union. This I am doubting, and with our spirit and our determination, I believe we will continue to lead this world. We are looked on by some people as the tail-end state, but we are staying in the lead from the medical view and so far ahead that we will forever be in the top bracket.

When we look over the past and try to analyze the present, we must look also to the future with its problems. Many have thought and have often said compulsory health insur-

ance would not happen in my day. During the war one of our great manufacturing plants for war materials had a sign at the gate that read like this, "Give your best today." In a distance at the entrance of the plant was this poster, "It may be too late now." We should have many of these posters in our offices. Socialized medicine is being pushed hard by politicians and uninterested groups who do not have love for humanity as the physician has, but only seek more power as a stepping stone to some other control. We have no record of improved medical service to the people in any nation that has tried socialized medicine, but we do know that the countries that have this type of medicine look to America for the advancement in medical discoveries. In these countries not one thing new that will benefit humanity has been discovered since the adoption of this type of medicine. In our nation the death rate is going down, in those countries the death rate is going up. When we have socialized medicine or political control, we will have the same rise in our death rate as in those countries. The English have had less than a year and the high tax on wages and the heavy tax on the Empire has put them already fifty per cent in the red. The reports are as the reporters want to make it, but facts will be known some day. We agree that the system of medicine of today can rightfully take some criticism and it is welcomed, for we would improve our care of humanity. Someone has stated that about three per cent of the doctors are not honest, but that only stimulates those who are trying to do their best.

We have tried to keep the medical profession out of politics all these years and screen advertisements to the minimum, but the day has come that we are forced to advertise. I hope that we can do a great job in informing the laity just what we are doing for humanity. In educational ways we can teach preventive medicine and alert the people to the diseases of age. We must let the politicians know that we have some political influence. Only a short time ago in one of our states, a candidate for United States Senator announced for office with socialized medicine as his platform. In a meeting of the state medical association, a candidate was chosen to oppose this man. The support of the entire medical profession was promised and the result was a great victory for the man chosen by the medical association. The defeated candidate made this statement,

"You cannot defeat the doctors." As far back as we have record, the doctors have carried one of the greatest influences in the community in which they live and do today. The people will not want socialized medicine and I say they will not have it. The American Medical Association has done and is still doing a great work; greater than most of us realize. We are being showered with untruthful criticism by a group of politicians that threatened us with anti-trust suits and even black lists of doctors, solely to bring out the profession for argument. We all are due just criticism and the American Medical Association has failed in some ways, but out of our trial must come a greater association in the future.

The largest bill before Congress today is the Engle bill introduced by Senator Lester Hill of Alabama. This bill was written up by forty-two of the forty-eight state presidents of medical associations—of whom I am happy to have been one. The Taft bill which is very similar to the Engle bill, throws all control of government aid to the states. With the Hatch bill and the Pepper bill centralizing everything in Washington more than a million people

would be employed in clerical work before any money could go to the care of the people and the support of the physicians.

We can say that Mississippi is probably the only state that is standing one hundred per cent for the ideal that the medical profession has stood for for centuries; that the association has fought for and will continue to fight for as long as time lasts. We also know that the people of Mississippi will not die for the want of medical aid if they ask for it. There is no way that we can take care of the sick unless we are given the opportunity. Our state is the only one in the nation that has provided funds to care for the charity cases in local hospitals, and the doctors are giving their services free and willingly to the unfortunate sick only for the asking. We are the only state today that is giving financial aid to the young men and women to study medicine so that they may return home to serve their community. The nation has its eyes on Mississippi and the doctors of our state, for we are leading the nation in caring for our people.

Myasthenia Gravis*

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NEOSTIGMINE (prostigmine) has been used in diagnosis and treatment of myasthenia gravis since 1935. In this period this disease has become increasingly more frequently recognized. It is often fatal but the prognosis has improved a great deal with adequate neostigmine therapy.

Myasthenia gravis is characterized by weakness of voluntary muscles and muscles of deglutition, producing partial ptosis of eyelids, diplopia, dysphagia, general muscular asthenia and fatigability, and often eventuating in death by fatigability of muscles of respiration or from aspiration of food into the respiratory tract¹. The muscle fatigability is associated with abnormal acetylcholine-cholinesterase balance at the myoneural junction or perhaps within the muscle itself.

The disease occurs at all ages. It usually progresses gradually with a tendency to remissions and relapses.

The diagnosis is made by presence of the above mentioned symptoms of muscle weakness, relieved by rest, and relieved by neostigmine.

Neostigmine (prostigmine) is available in several forms.

1. "Diagnostic ampoule" with neostigmine methylsulphate 1.5 mg. plus atropine .65 mg. (grs. 1/100).
2. Neostigmine methylsulphate .5 mg. for routine use. There is also a .25 mg. ampoule available.
3. Neostigmine bromide 15 mg. for routine oral use. Neostigmine given orally is 1/15 as effective as the neostigmine methylsulphate given parenterally².

*Read at quarterly meeting of Northeast Mississippi Thirteen Counties Society.

4. There is also a combination tablet with morphine containing .5 mg. neostigmine methylsulphate with morphine grs. 1/8, for general medical use.

A case in which this disease is suspected is given one diagnostic ampoule of the neostigmine and the therapeutic test consists of observation for prompt alleviation of the symptoms. In cases of myasthenia gravis with dysphagia a thick barium paste may be given and fluoroscopic observation will show retention of barium in the pharynx, then a diagnostic ampoule of neostigmine may be given and fluoroscopic observation of barium swallow 20 or 20 minutes later will show normal swallow reflex without retention of barium³.

Cases of this disease vary greatly in severity. Some present only complaints of ptosis, others show ptosis, dysphagia, and extreme general muscular weakness which incapacitates them completely.

Diagnosis may be made early or may be long delayed. The diagnosis has so often been made by the neurologist or ophthalmologist rather than the general medical man that neurologists have more or less taken over the treatment of this disease in the past. However, it is chiefly an internal medical problem. The ophthalmologist is often the first to suspect the diagnosis, as diplopia or ptosis are the most common early symptoms. Both constitute the earliest symptoms in a high percentage of all cases (56 per cent in a series of cases at the Mayo Clinic had these as the earliest symptoms and these symptoms were present in 94 per cent of cases first presenting themselves at the Mayo Clinic)⁴. Dysphagia was an important symptom in 40 per cent of these cases.

Respiratory failure has been mentioned as the actual cause of death in most fatal cases. Respiratory distress may be manifested by restlessness, anxiety, and difficulty in breathing, and may go on to cyanosis, apnea, and death unless promptly relieved. Some cases of myasthenia gravis are found to be associated with tumors of the thymus gland and thymectomy has been more or less curative in a small number of these cases. Surgical therapy is under active study at present.

Roentgen radiation of the thymus is also under study and has not yet been fully evaluated. It has not been particularly effective in most cases in which it has been used, yet dosage may have been inadequate⁴.

Therapy of this disease consists chiefly of adequate dosage of neostigmine orally or hypodermically. Frequent and continued observation of the patient is necessary to adjust dosage to control symptoms adequately while avoiding excessive gastro-intestinal side effects of the neostigmine. Frequency of administration of neostigmine varies from one or two tablets daily up to thirty or more tablets per day. Seventy-three of one hundred cases reported by Eaton took less than ten tablets per day although some of them might have done better on higher dosage⁴. The average patient takes only one tablet per dose while the more severe cases may require up to three or four tablets per dose.

An unusually severe case of myasthenia gravis which terminated fatally approximately nineteen months after onset of symptoms is presented below.

Mr. K., aged 69, was observed on numerous occasions in the spring of 1947 and was followed regularly with regular neostigmine therapy from August 1947 until his death in August 1948. The sequence of development of symptoms was as follows: ptosis of the left eye first developed in January 1947; ptosis of the right eye developed in March 1947; diplopia first appeared in April 1947; dysphagia developed in November 1947 and dysarthria was observed about that time; attacks of respiratory distress began about June 1948; general muscular weakness had been present for many months before the eye symptoms developed, and remained prominent throughout.

Past history of this case gave no definite indication of previous occurrence of similar symptoms. However, there was a history of a prolonged disabling illness in 1933 which was said to be pellagra but which could possibly have been a manifestation of myasthenia gravis. Patient had been on a meat-free diet for a number of years before that illness because of chronic dyspepsia.

Physical examination when patient was first seen in February 1947 revealed a well-developed, elderly male of 69, who walked with a cane. There was a partial ptosis of the left upper eyelid. Pupils were normal; fundi were negative except for rather advanced arterio-sclerotic changes. There was no evidence of weakness of extra-ocular muscles. Reflexes were normal except for a very slight difference in the knee jerks, slightly greater on the right. There were no positive Babinski, no Hoffman signs. No sensory loss was noted. ENT negative. Lungs

were clear. Heart was not enlarged and sounds were of fair quality. Blood pressure was 170/100. Abdomen was negative except for a rather weak right lower rectus scar from previous appendectomy. Urinalysis was negative. Hemoglobin 90 per cent. RBC 4.8 million. WBC 10,800. P 59. L 41. Eosin. 10. Blood Wassermann negative. A spinal fluid examination done subsequently revealed normal pressure, clear fluid containing 4 cells, normal protein, and 1 plus Kolmer. The colloidal gold curve was 1 1 2 2 2 1 1 0 0 0.

Differential diagnosis seemed somewhat complicated in this case and a rather timid trial of neostigmine therapy was made with indeterminate results along in April. A trial of antiluetic treatment was made on the doubtful indication provided by the one plus spinal fluid and results of this were indeterminate. Eventually with development of more severe symptoms, by August 1947 it became obvious that neostigmine was very helpful in controlling symptoms. From that time until death one year later patient took increasingly greater dosage of neostigmine, dictated by progressive increase in severity of the disease. Various adjuncts to the neostigmine therapy were used and of all only ephedrine and atropine seemed to add appreciably to the control of symptoms. Ephedrine was used fairly regularly in 3/8 grs. dosage t.i.d. during times of more marked distress. Atropine or belladonna were used fairly regularly to help control excessive peristalsis induced by the high dosage of neostigmine.

At first four tablets of neostigmine per day provided fairly good relief of symptoms—later twenty-four or more tablets per day with extra

doses parenterally before meals were required for even partial relief of symptoms. The medication was observed to have very specific effect on the dysphagia and general weakness but was never markedly efficient in controlling the ptosis and diplopia. Patient was seen many times when he was unable to swallow even a sip of water, yet a few minutes after an extra dose of neostigmine given parenterally he would be able to swallow food as well as fluids. His wife was proficient in administering the neostigmine hypodermically, yet frequent guidance was necessary to adjust the dosage. The neostigmine was used during the last six months of treatment in dosage of one tablet hourly during the day until 10:00 p.m., then two hourly during the night and at times this was supplemented by extra doses of .5 mg. neostigmine methylsulphate parenterally a few minutes before meals.

In the last weeks of his life patient had spells of dysphagia associated with respiratory embarrassment and extra dosage of neostigmine would relieve symptoms fairly promptly. However, the medication gradually became less efficient in controlling these spells and the patient finally expired during such an attack while hospitalized in August 1948.

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Chest Injuries*

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INTEREST in trauma was stimulated by the recent war. The large number of casualties encountered afforded crystallization of ideas and decisions of heretofore moot questions. Although the usual practice is to divide chest trauma into two groups—penetrating and non-penetrating—the problems of the two are so similar that such a breakdown has obvious drawbacks.

The principal early danger from chest injury arises from **disturbance of the cardiorespiratory mechanism** and **shock**; the latter usually from blood loss. Later, infection becomes of serious import. In any case of chest trauma, one or more of the following factors determines the abnormal physiology:

I. **Damage to Lung Parenchyma.** Contusion of the lung, with resultant edema and hemorrhage, is present in most penetrating and many non-penetrating wounds. Some degree of laceration is not uncommon. Such injury is often present without rib fracture.

If extensive, the picture is that of "traumatic wet lung," in which the tracheobronchial tree is so filled with fluid that the patient may truly drown in his own secretions. This clinical syndrome results from the local contusion, secondary bronchorrhea, and faulty bronchial drainage. It is further aggravated reflexly from a painful chest wall. Traumatic wet lung manifests itself by a wet, bubbling, inefficient cough. Dyspnoea and cyanosis are frequent. Diffuse rales and rhonchi are revealed with auscultation. If effective therapy is not instituted, death may ensue.

Treatment is directed towards clearing the tracheobronchial tree. Intercostal nerve block with novocaine is used to overcome pain in the chest wall, allowing more effective tussive efforts on the part of the patient. Frequent change of position and CO₂ inhalations are indicated. If these measures fail to effect adequate bronchial drainage, catheter aspiration of the tracheobronchial tree should be done. This can often be accomplished without topical anesthesia. Occasionally it is possible to leave the catheter in the trachea and use it as a

means of administering oxygen. If the above measures fail to provide an effective airway, no time should be lost before bronchoscopy is done. This is unquestionably the most effective means of draining the excessive bronchial secretions. It should be repeated when necessary. Intravenous atropine in dosages of 1/150 to 1/100 grain is of some value in pulmonary edema. Morphine **must** be used cautiously as it may add to the anoxia and further depress the cough reflex. All too frequently restlessness from air-hunger is incorrectly interpreted, and morphine given. This furthers the anoxia and may actually lead to a fatality!

2. **Pleural Abnormality.** Pneumothorax, or a combination of the two is frequently seen.

Pneumothorax is due to a tear in the lung or hole in the chest wall. Ordinarily this air is not harmful (and may be allowed to absorb spontaneously) unless associated with other severe injuries or a valve-like flap, creating a pressure or tension pneumothorax. In the latter state, air enters the pleural space more readily than it escapes with build-up of positive pressure, collapsing the lung and shifting the mediastinum. Suffocation results if this interference with respiratory function is not corrected. Prompt insertion of a large needle or 16 to 18 French catheter into the second or third interspace anteriorly is needed. Attaching the needle or catheter to a water-trap (or finger-cot with a slit in the end) will allow satisfactory egress of air. In nearly every instance the underlying pulmonary defect closes spontaneously; only rarely is surgical closure necessary.

The early dangers of hemothorax are the actual blood loss and the interference with respiratory exchange. Later it may result in loss of lung function and infection. In most cases, the internal bleeding will stop spontaneously. This is particularly true of hemorrhage from the lung substance, which is controlled by collapse of the lung. Careful check of the pulse and blood pressure findings, and their response to blood and its substitutes is essential, for occasionally operative interference will be necessary to prevent exsanguination from a bleeding intercostal, internal mammary, or hilar vessel.

*Presented at "Symposium on Trauma," Charity Hospital Staff Meeting, October 26, 1948.

Treatment of the hemothorax after the primary bleeding has ceased has been controversial in the past. One school championed avoidance of aspiration unless it was mandatory from respiratory embarrassment. We are indebted to the military surgeons of World War II, for they have shown that early and repeated aspirations are unquestionably the treatment of choice in hemothorax. Every effort should be made to keep the pleural cavity dry! Withdrawal is begun 24 to 36 hours after injury and continued daily until the lung is re-expanded. Usually three to five aspirations will suffice. Air replacement is not in order as it only delays re-expansion of the lung and probably favors the development of empyema. Secondary bleeding following aspiration is extremely rare; thus, there is no need for air replacement.

Clotted or organized hemothorax, and occasionally empyema, will result in many of the cases in which aspiration is omitted or instituted too late. Rarely, early aspiration will be ineffectual due to the large size of clumps of fibrin and clots. Such cases should be treated surgically: decortication will result in almost complete eradication of chronic pleural sepsis and allow restoration of function to the underlying lung.

3. Chest Wall Injury. In general, wounds of the chest wall are handled as those in other parts of the body: Careful cleansing, debridement, and primary suture. Sucking wounds allow more or less free interchange of air between atmosphere and the pleural cavity,

creating increasing pneumothorax and mediastinal shift. Immediate closure with an airtight dressing, usually of vasoline gauze, is imperative. When the condition of the patient permits, surgical closure should be done. In larger wounds, this may represent a real problem, necessitating relaxing incisions and pedicled muscle flaps.

Conservatism is the key note in the treatment of rib fractures. Intercostal nerve block with novocaine is the treatment of choice, although adhesive strapping (limited only to the costal margin) may be helpful. Multiple fractures of the ribs may result in loss of stability of the chest wall and paradoxical respiration: i.e., the detached segment is actually drawn in when the chest expands and pushed out with expiration. This results in serious impairment of respiratory exchange. Prompt immobilization of the "flail chest" with adhesive strapping is essential.

Time does not permit an adequate discussion of cardiac injuries and thoraco-abdominal wounds. Suffice it to say that one must be continually alert to detect signs of cardiac tamponade: increased venous pressure, lowered pulse pressure, and distant heart sounds, and the signs of peritoneal irritation denoting damage to abdominal viscera.

Conclusions: In the management of chest injuries, principal consideration must be given to the restoration of normal cardiorespiratory physiology, the treatment of shock, and the management of complications or sequelae as they arise.

Mississippi needs a four-year medical school to cooperate with the Oak Ridge Institute of Nuclear Studies in its plans for giving specialized treatment for cancer patients.

"You are more valuable to us as a four-year medical school than as a two-year school," Dr. Marshall Brucer, chairman of the Medical Division of the institute, told a medical alumni meeting Friday night at the University of Mississippi.

The institute plans to admit cancer patients from medical school hospitals for radioisotope treatment at Oak Ridge Hospital. Upon completion of the treatment, the patients would be returned for further care at the school hospital.

The Responsibility of the Private Physician in Communicable Disease Control*

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EXCLUSIVE of the common cold, the communicable diseases cause roughly 3,300,000 days of illness in an average year in Mississippi. There are in excess of 200,000 new cases of these diseases each year together with a carry-over of thousands of cases of the more chronic diseases from year to year. These diseases combined with their sequelae cause thousands of deaths each year in Mississippi.

This background of facts combined with the fact that these diseases are transmissible from person to person or from insect or animal host to the human being is sufficient reason for constant concern and even fear in the public mind. Regardless of the marked decline of incidence which has been shown by many of these diseases in the past few years, the communicable diseases remain a very serious problem accounting for a great portion of the total illness.

Of the fifty communicable diseases occurring in Mississippi, some are almost completely controllable or preventable if the scientific knowledge at hand were properly applied to the susceptible, infected, or exposed population as the case might be. There is little excuse for diphtheria, smallpox, or typhoid fever; little more for syphilis, tuberculosis, and typhus. Many of the other diseases are partially controllable either by prevention or modification. The list of diseases which are controllable to a considerable extent is getting longer through the discovery of new diagnostic, therapeutic, and preventive agents and techniques. Proportionately the list of diseases for which there are no known control measures is growing shorter. Even at present a few of the diseases are in the process of being transferred from the noncontrollable to the controllable column, such as influenza, pneumococcus pneumonia, syphilis, gonorrhea, typhus fever and meningococcus meningitis.

On the one hand there is a vast amount of knowledge, techniques, methods, and procedures which if applied to the maximum would give the population a much greater degree of protection than is now being given. On the other hand is the population which will continue to be the victim of this group of diseases unnecessarily and to the extent that known control measures fail to be applied. There is a serious bottle-neck between the vast amount of knowledge of these diseases and their control and the need for the application of this knowledge to the general population. The size of this bottle-neck is readily adjustable but only by two groups of people; namely, the private practitioner of medicine and the health officials. Of these two groups, the private physician is in the most strategic position to increase the flow of control knowledge, methods, and techniques to the population.

The public health worker in Mississippi is the official arm of organized medicine—the private physician. At the same time the health officer is the official barricade of the people against the hazards of communicable diseases. The effectiveness of his liaison between the physician and the public is determined to a very great extent by the interest and action of the private physician. Every private physician's office should be a community communicable disease control center with much greater degree of aggressiveness based on a broader concept of community welfare and protection than has been the case in the recent past. The private physician must become more actively interested in the people of the community as a whole which he serves rather than individual cases in dealing with communicable disease control. To the extent which he does so will the need for action on the part of official health agencies decrease. Diagnosing and treating an individual case is by no means the end of responsibility, for each case is a link of a chain of many cases, carriers, and circumstances which require the action of either the physician or health officer.

*Presented before Northeast Mississippi Medical Society, Thursday, January 8, 1948, Methodist Church, Houston, Mississippi.

The reason why thousands of people are being given active immunization against diphtheria, smallpox, and other diseases by health agencies is because there is a moral need for it, and the private physician puts forth too little effort to do it on his own among his clientele. The reason why syphilis did not start its decline until the health departments began diagnosing, treating, investigating, and educating was because the physician had not done these things in his own practice to a sufficient degree to materially affect the problem. Diagnosing and partially treating a case of syphilis does not solve the community problem based on public desire and need relating to syphilis.

Communicable disease control methods fall naturally into two broad categories as to purpose. The first of these is to raise the level of specific immunity of the susceptible masses of the population to each of these diseases to such an extent that the number susceptible is too low to permit spread. Unfortunately, the knowledge at hand at present permits the use of this method in relatively few diseases including diphtheria, smallpox, typhoid fever, whooping cough, scarlet fever, tetanus, typhus fever, influenza, and possibly pneumococcus pneumonia. Tuberculosis may be added to this list within a few years pending further research. The second of these two broad categories of control is breaking the chains of infection and reducing the size of the stream of infection flowing from the source to the uninfected. This general method of control includes treatment of cases and carriers, isolation and quarantine, personal hygiene and environmental sanitation including milk, food, and water cleanliness, and eradication or control of animal and insect reservoirs of infection. Both of these general methods of control come only with education of the populace as to the amount of risk involved in failure to accept and participate in control, what the control methods are, and what may be expected of each of the measures.

Because of his knowledge and the esteem in which he is held by his community, the private physician is in a most advantageous position to either apply these control measures or make it possible for his co-workers—the public health staff—to apply them. He and only he can determine whether these control measures are delivered to the points of greatest effectiveness and need. If he wants these measures applied and demonstrates his desire by applying such of those measures as he can and

actively supports the public health staff by deed or enthusiastic word in applying those measures which he cannot or does not care to apply, they will be applied to the extent of maximum benefit of the population.

Dr. Haven Emerson has stated "Our first obligation as trustees of scientific information is to make sure that the diseases known to be wholly or partially preventable are within the limits of our resources, in fact prevented. For this purpose, knowledge of the prevalence of this group of diseases is essential. Disregard of those which cannot be prevented is folly because these may become partially or totally preventable at any time." This presents the problem of morbidity reporting. Control of diseases cannot be accomplished without quite definite knowledge of how much of a given disease there is in a given area, month, year, race, sex, age group, and conditions under which they occur. In disease control this is comparable to a football coach scouting his future opponent team or to reconnaissance in war. The problem presented by a given disease or all of them cannot be evaluated as to magnitude, need for action, possibility of control, and effect of control measure without some reasonably accurate method of measurement. Neither can the private physician and health department persuade the public to accept and pay for protective measures without proper morbidity data. Morbidity reporting by private physicians is the method universally used. There is no other group of people which can supply this information so vital to the health of the community, state, nation, and the world than the private physician. Half-done and improperly interpreted it is of little value and misleading. Properly and reasonably completely done it can be of tremendous help in delivering to the population maximum protection. With the protection afforded the physician by medical licensure laws there goes a moral obligation to the people to serve them not only individually in the diagnosis and treatment of illness but also collectively in measures which will protect them against communicable diseases. By legal implication, regulations under authority of law, and moral obligation, this problem of accurate, prompt, complete morbidity reporting is directly in the professional lap of the private physician—not just a few but all of them. I believe that all physicians have enough interest in community welfare to do this job unselfishly and completely when they understand the need for it and certain

fears and suspicions are dispelled from his mind provided it is not too time-consuming.

The old reporting system involved the reporting of a few diseases by identity of patient within twenty-four hours after discovery on clinical report card and all of them on monthly numerical morbidity report cards at the end of each month as to number of cases seen that month. This system was cumbersome, inaccurate, and in some instances irritating to those reporting and to those legally responsible for collecting reports. This old system led to much duplication of reporting particularly of the more chronic diseases and gave no information as to age, sex, and specific community of occurrence of many of the diseases. It required two types of cards for reporting; namely, the clinical report card and the monthly report card. It was also the cause of the greatest month-end guessing game for private physicians ever invented by man.

In an effort to simplify reporting, making it less burdensome on the physician and to collect much more useful and dynamic facts, a new system of reporting became effective January 1, 1947. It provides for the reporting of all of this group of diseases by identity of patient and disease on a case report card. No month-end report is required or needed. The card now in use is bound in books and perforated so as to provide for convenient rapid use by the physician. It is a postage-free card, self-addressed to the local health officer. On the inside of the cover leaflet of each book of cards is a list of reportable diseases each with a code number. The code number of the disease is used by the reporting physician rather than the name of the disease in order to protect the confidential nature of this information with respect to a given patient.

Some physicians have said that reporting takes too much of their valuable time. Each card filled out requires by actual test only from one to one and one-half minutes. The number of cases of all these diseases to be reported by all physicians in one year in the state would probably not exceed in highest incidence years more than 300,000 cases. This means that on an average each physician in the state would report less than one case per day—more nearly one case every other day. It is not likely that the time consumed by reporting will interfere with the number of patients seen.

Other physicians have indicated that reporting such information disturbs the confi-

dential nature of the patient-physician relationship and that patients don't like to have their cases reported. We assure you again that health department personnel will treat all information as to identity of patient as confidential information. In addition they are instructed to visit no reported case without the knowledge and consent of the reporting physician. An occasional case might not like to be reported but you must remember that all of your clientele except the case in question at a particular moment expects you to report that case so that the presence of the case in the community may jeopardize the health of the community as little as possible. There is nothing in the Hippocratean Oath, Code of Medical Ethics, Bill of Rights, nor elsewhere that makes the right of the individual patient or doctor greater than the welfare and right of the community with respect to communicable diseases.

One might ask, "What do you propose to do with this information once you have it?" The answers are:

1. When reporting becomes reasonably complete so that facts gathered mean something, it is planned to return to each physician on a monthly or quarterly basis a summary of the situation with reference to each disease in the state as a whole and each county. This would be presented in such form as would be interpreted by the physician to his clientele and for display in his waiting room and office. The private physician by his accurate current knowledge of the amount of each disease occurring will be able to persuade more of his patients to accept and pay for protection.
2. This information is absolutely essential in gauging the effectiveness of control measures being applied and in determining the need for the institution of new measures in the state as a whole or in any community in the state.
3. Neither the private physician nor the public health staff can create a receptiveness and awareness in the public mind which will lead to the application of control measures without facts which can only be accumulated by morbidity reporting. Such facts serve as potent educational material in causing the public to seek protection and actually participate in protective activities.

Whether you have enough interest in the protection of your community to do morbidity reporting promptly and completely is left for each of you to decide. We can only respectfully request and urge your complete cooperation and at the same time assure you that the reported information will be safeguarded for your professional protection and used only in cooperation with you in safeguarding the people of the state. A book of

report cards in your bag and one on your desk will make the job easier.

In conclusion, communicable diseases will be controlled only to the extent that you actively participate in applying effective control measures in everyday practice. Health department efforts are adjunctive to yours and depend upon your interest in the community as a whole. Morbidity reporting is fundamental in the control of any and all of these diseases.

Cervical Plexus Block, Brachial Plexus Block and Stellate Ganglion Block*

TECHNIQUES UTILIZING SOFT TISSUE AS LANDMARKS

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Greenwood, Miss.

I SHALL discuss cervical plexus block, brachial plexus block and stellate ganglion block and describe techniques for the administration that take advantage of soft tissue rather than bony structures as landmarks. These procedures were worked out in the anatomical laboratory and thoroughly tested clinically.

The landmark used in cervical plexus block is the sternocleidomastoid muscle. The cervical plexus arises from the upper four cervical nerves, and the superficial portion of this plexus winds around the posterior edge of this muscle at its midpoint. The deep portion of the cervical plexus consists of communicating and muscular branches only, so that it is unnecessary to block this part. The superficial portion supplies the front and side of the neck from the mandible to below the clavicles. It also supplies the posterior surface of the ear. The back of the neck is supplied by the posterior spinal nerves.

The technique of the block is simple, so simple that it always amazes me to inject some solution in each side of a person's neck and to have his expression remain unchanged when a towel clip is stuck into his upper manubrium. To perform the block have the patient lying on his back with his head turned away from the side to be blocked. Make a skin wheal at the posterior edge of the sternocleidomastoid muscle midway between the tip of the mastoid and the clavicle and insert the point

of the needle just under the deep fascia. Inject 15 to 30 cc. of 2 per cent procain with or without adrenalin. Anaesthesia is effective within a few minutes. I have used this anaesthesia for thyroidectomies, tracheotomies, suture of lacerations including a severe laceration involving the thyroid cartilage, excision of brachial cleft cyst, excision of skin for full thickness graft for the face, excision of accessory ear pinna, excision of thyroglossal cyst, skin graft, excision of submaxillary gland, incision and drainage of submaxillary abscess, and others.

It is usually possible to do a thyroidectomy with ease. An occasional case will need a small amount of local infiltration at the lower pole or immediately over the trachea. It should be remembered that patients with toxic goiters tolerate adrenalin poorly so that this drug must not be used when this disease is present. Pitkin recommends using ephedrin in these cases. This method of anaesthesia is especially useful in incision of submaxillary abscess or Ludwig's angina, conditions in which local anaesthesia is most painful and general anaesthesia dangerous due to an already embarrassed airway. With this block it is possible to clamp and tie bleeders and so do away with the fear of secondary hemorrhage.

The only hazard to cervical plexus block I can see is sensitivity of the patient to the anaesthesia agent. This is kept to a minimum by preanaesthetic barbiturates and omission of adrenalin in hyperthyroidism. If the procedure

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is longer than the effect of the anaesthetic it is a simple matter to do another block. It is well to combine this block with lingual and mandibular block in procedures which get near the floor of the mouth or with local infiltration in this region. If a thyroglossal cyst communicates with this mouth local infiltration will have to be used as the mucous membrane of the tongue is approached.

Cervical plexus block is a simple, efficacious and safe procedure.

Brachial Plexus Block. Brachial plexus block is more difficult and a little more hazardous than cervical plexus block, yet it too is very efficacious. The landmark used is the scalenus anticus muscle. The scalenus anticus muscle arises from the transverse processes of the third, fourth, fifth and sixth cervical vertebrae and inserts into the inner border and upper surface of the first rib. This muscle can be felt just lateral to the sternocleidomastoid muscle. At the point where the injection is to be made usually lies the anterior jugular vein. The brachial plexus arises from the lower four cervical and first thoracic nerves. It forms three cords and at a point about two centimeters above the clavicle merges from between the scalenus anticus and the scalenus medius and proceeds between the first rib and the clavicle to the axilla and the arm. It is accompanied under the scalenus by the subclavian artery while the subclavian vein lies in front of this muscle. The brachial plexus supplies the entire upper extremity except a portion of the inner arm which is supplied by an intercostal nerve.

In doing a brachial plexus block have the patient lie with his shoulders on a small pillow and his head turned away from the side to be blocked and chin down. The lateral border of the scalenus muscle is palpated and a skin wheal made two cm. above the clavicle at the muscle's lateral edge. An ordinary fine gauge intravenous needle is inserted caudally at an angle of 30 to 45 degrees with the skin of the neck. It is advanced until the patient experiences paraesthesia in the forearm or hand. This twinge of pain is accompanied by a jerk of the muscle of the extremity. Fifteen to thirty cc. of 2 per cent procain containing 6 minims of adrenalin to the ounce is injected. If there is no paresthesia before the needle reaches the first rib, withdraw and reinsert the needle at a slightly different angle until there is paresthesia. It takes as long as twenty minutes for anaesthesia to be complete. For

this reason I make it a practice to inject the anaesthetic solution before scrubbing for the surgical procedure.

After successful brachial plexus block it is possible to perform any operation on the upper extremity up to a few inches above the elbow. The successfully blocked patient tolerates a tourniquet on his arm very well. Procedures that have been carried out include open and closed reduction of fractures, tendon repair, excision of ganglia, drainage of hand infections, debridement and suture of lacerations, cleansing of burns, skin grafting, amputations, and others. The method makes it safe to take a patient into a dark room and reduce a fracture under fluoroscopic control. The tolerance of the tourniquet is most desirable in hand infections and ganglion excisions. The duration of anaesthesia makes hurry unnecessary. In one case in which there was an extensive injury to a hand from an explosion, anaesthesia lasted five hours. In this patient pain and shock persisted for several hours in spite of a total of one grain of morphine and repeated transfusions of plasma and blood. Immediately after pain relief from the brachial block he came out of shock, thus supporting clinically the theory of pain as a maintaining factor in peripheral circulatory failure.

Although useful in many procedures and relatively simple to perform (45 blocks by 5 operators with 3 failures in Murphey's series) there are some dangers and side effects. Among these are sensitivity of the patient to the material injected, pneumothorax, blood vessel puncture, Horner's syndrome, and phrenic nerve paralysis. Sensitivity has been mentioned in cervical plexus block. The dome of the pleura extends well into the neck so that it is important to keep superficial to the first rib to avoid injury to this structure and pneumothorax. Horner's syndrome and phrenic nerve paralysis are transitory. The phrenic nerve paralysis might be a factor in a patient with oxygen deficiency. Vene puncture is of no consequence if one is careful not to inject the anaesthetic agent into the lumen of a vessel. By proper care these dangers will not materially detract from the use of this most useful method. The results are gratifying.

Stellate Ganglion Block. The results in a properly executed and properly indicated stellate ganglion block are also gratifying. The landmark used for stellate ganglion lies on the bodies of the seventh cervical and first thoracic vertebrae. The block is performed

by having the patient lie on his back with his head turned away from the side to be blocked. A skin wheal is made at the lateral edge of the scalenus anticus muscle at the level of the cricoid cartilage, and a spinal needle is inserted at an angle of 15 degrees with the floor until it rests upon the body of the seventh cervical vertebra, the needle going under the carotid sheath. It is then withdrawn $\frac{1}{4}$ cm. and aspirated for blood or spinal fluid, and 10 cc. of 2 per cent novocain without adrenalin are injected. A successful block is manifest by a Horner's syndrome; that is, lid drop, enophthalmos, small pupil, conjunctival injection, and dryness of the side of the face. There is also congestion of the vessels and warmth and dryness of the upper extremity on the blocked side. These phenomena appear in a few minutes after a successful block.

The indications for a stellate ganglion block are conditions in which it is desirable to obtain sympathetic release in an upper extremity as in such spastic diseases as Raynaud's disease, causalgia and blood vessel spasm following injury. It has been used in contractures following immobilization. The present technique was devised after several members of the hospital staff were unable to perform a successful stellate block on a man with arterial spasm of the upper extremity following a crush injury to the brachial artery.

The method is uniformly simple and successful, although not without danger. One

colored woman blocked by a staff member developed cardiac standstill and coma. The heart resumed its contractions after intracardiac adrenalin, but the patient never regained consciousness and died a few days later. This was a reaction to the anaesthetic agent. Other dangers are penetration of the pleura if the needle is inserted at too low a level, intravascular injection of the anaesthetic agent, and intraspinal injection. However, with care these dangers can be minimized and free use made of this simple method where stellate block is indicated.

Summary

1. Technique for cervical plexus block, brachial block, and stellate ganglion block using soft structures for landmarks have been described and discussed.
2. The sternocleidomastoid is the landmark used in cervical plexus block while the scalenus anticus is the landmark used in stellate ganglion block and brachial plexus block.
3. These procedures are most effective while being relatively simple and safe.

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The Surgical Treatment of Intractable Dysmenorrhea*

New Albany, Miss.
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THE purpose of this paper is to present the technique and results of presacral neurectomy as used in nine cases of intractable dysmenorrhea in which all other means of treatment had failed. The oldest of these was done five years ago and the last two months ago.

Presacral neurectomy had its inception in the anatomical fact that the pain fibers from the uterus travel over a definite and constant path and the fact that the sensory pathway of all viscera travels usually with the sympathetic nervous system¹. These visceral afferent neurones, or pain pathway fibers, in the uterus travel upward through the superior hypogastric plexus or presacral nerve and enter the cord at about the level of the eleventh and twelfth thoracic vertebrae². The pain pathways from the tubes and ovaries spring from a higher level as they develop embryologically higher in the abdomen and the nerve supply accompanies the ovarian artery in its later descent³.

On the above premises was predicated the fact that to sever the sympathetic pathway at the level of the superior hypogastric plexus would give freedom and relief of pain arising from the uterus but not relief of pain arising from the tubes or ovaries. It is equally true that essential dysmenorrhea is the only type that will respond to this treatment, as the secondary dysmenorrhea, as that secondary to tumors, inflammatory disease, endometriosis, etc., usually involves the tubes and ovaries and their pathway of pain are not severed at the presacral level. It is interesting to note that the primary object is not to sever the sympathetic supply to the uterus but this is necessary in order to sever the pain fibers, or visceral afferent neurones, that accompany the sympathetic fibers¹. Apparently no harm is produced. Sex life and child bearing continues unhampered. One of my cases operated upon in 1946 is now in about the seventh month of pregnancy.

Presacral neurectomy in the male is performed occasionally in cord bladder to permit

easier emptying. Bladder emptying is controlled by the parasympathetic, which is left in control. In the male the power of ejaculation is left. Libido is not impaired. These are merely interesting facts covering this operation, which are brought out to show that the possibilities of therapy by means of the autonomic nervous system have been only scratched and that this type of surgery has been performed long enough and the results observed over enough years to know if there are to be any side effects and to deem it safe for the vast number of young women who are handicapped socially and economically by loss of time and the bearing of excruciating pain at each menstrual period.

I performed my first presacral neurectomy five years ago and my most recent was two months ago. Out of the total of nine, five have obtained complete relief, two have had partial relief and two have been failures. With more study of these cases and with the recent knowledge that has come to light I am convinced that a higher percentage of cures can be obtained.

The proper selection of cases chooses only those of the essential dysmenorrhea type, whose pain usually precedes the period by several days, complains of backache, headache, and a flow more scanty than profuse, and whose pain only occurs at the menses. These patients should be given every opportunity to obtain relief by conservative means first, psychotherapy, sedative, antispasmodics, and hormone therapy should be given a thorough trial. In addition to this groundwork there is a simple test which will help to classify quickly true essential dysmenorrhea from the psychogenic type. Beginning the first day of the menses 1 mg. of diethylstilbestrol is given orally daily for twenty days. If there is in three to five days later a short painless period this individual is considered a likely subject for presacral neurectomy⁴. If there is pain or even doubt there will be little relief obtained from surgery. Sturgis and Albright have proved that the pain of essential dysmenorrhea can be prevented by proper dosage of diethylstilbestrol to prevent ovulation. Another test is to interrupt the pain pathways by injection of

*Read before the Northeast Mississippi Medical Society at Houston, Miss., Jan. 8, 1948.

the sympathetic lumbar ganglia below the twelfth thoracic vertebra during the height of the pain². If this gives relief then interruption of the pain pathways should give relief. As I look back over the two failures I had in my series I realize that these two were not fit subjects. One was a frank case of causalgia of somatic origin. She was operated upon twice elsewhere and the pain was due to a spinal nerve terminal caught in a scar contracture. Other means relieved her but presacral neurectomy did not. My other failure was an obvious psychoneurotic and I know of nothing that will help her type of case.

The technique of presacral neurectomy is essentially an anatomical dissection of the posterior pelvis⁵. An incision is made to the left of the umbilicus and extending several inches below. Good exposure is essential. With the patient in Trendelenberg position the intestines are packed upward and the colon to the left. The posterior peritoneal is incised over the bifurcation of the aorta and two inches upward and then three inches below. Beneath the peritoneal flaps and upon the aorta is a mesh network of loose connective tissue. This is separated from the aorta and severed and ligated at the upper end and by gauze dissection this network of connective tissue containing the presacral nerve fibers are dissected downward into the inter iliac trigone extending laterally to the ureters and downward to the base of the broad ligament. It is significant that the plexus of nerves lies usually slightly to the left field and should be watched for. The anatomy is beautiful in this region; the ureters and iliacs stand out vividly. The middle sacral artery, which courses over the sacrum can be ligated if desired. A few small veins are usually torn from the side of the iliac veins but these are not troublesome and can be ligated or controlled by gauze sponge packs. At the completion of the operation I use 5 cc. of topical thrombin as this controls oozing and serum and seals the posterior peritoneal flaps back into position until sutures are scarcely needed. It is always well to correct any other pelvic anomaly and it is significant that in my cases that obtained greatest relief other simple necessary procedures were done at the same time, as suspension or D and C.

Once relief is obtained by this means it is permanent. My oldest case of five years is as

free of pain now as she was the next few months following surgery. The question of the regeneration of the sympathetic fibers or the visceral afferent neurones has received very little support from these cases of pelvic sympathectomy. An interesting personal observation is that successful cases can usually be determined the day following operation. There is a remarkable relief and freedom from pain and postoperative discomfort. That the pelvic operative field has been denervated appears to bear fruit from the beginning. The hospital stay and convalescence usually parallels that of an uneventful appendectomy.

Conclusions

Presacral neurectomy or resection of the superior hypogastric plexus is an efficient method of relieving the pain of essential dysmenorrhea when all other methods fail, if certain criteria are observed, namely:

1. That cases of essential dysmenorrhea be selected.
2. That the essential dysmenorrhea cases be further selected on the basis of a complete cycle without ovulation as covered by the administration of diethylstilbestrol. If this period is painless, presacral neurectomy will relieve.
3. That the source of pain arising from the uterus be differentiated from the pain arising from the tubes and ovaries. Presacral neurectomy will not relieve the latter.
4. That trial therapy by all other conservative means be given first. Most cases of essential dysmenorrhea can be relieved or partly relieved by this means.
5. That in case presacral neurectomy is performed, a wide meticulous dissection beginning two inches above the bifurcation of the aorta and extending laterally to the ureters, posteriorly to the periosteum of the sacrum and inferiorly to the base of the broad ligament, be carried out.

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Clinical Review of Endometriosis

W. B. WIENER

Jackson, Miss.

ENDOMETRIOSIS is the name applied to that condition in which tissue resembling more or less perfectly the uterine mucous membrane occurs aberrant in various locations outside the uterus. This aberrant endometrium has been found in the ovaries, the uterine ligaments, the rectovaginal septum, the peritoneum over pelvic structures, the umbilicus, laparotomy scars, hernial sacs, the appendix, the vagina, the vulva, the cervix, tubal stumps, episiotomy scars, the thigh, the arm and the lung.

While Russel, in 1899, first reported finding endometrial tissue in the ovary, it was not until 1921 when Sampson published his epical paper, *Perforating Hemorrhagic Cysts of the Ovary*, that the significance of endometriosis was realized. Since 1921, much has been written about the disease.

Endometriosis is a disease of the childbearing age. The majority of cases fall between the ages of thirty and forty years. The youngest case that has been reported was thirteen years of age; approximately 10 per cent of the cases occur after fifty years of age.

In the last decade, there has been an increase in the incidence of endometriosis. Some say that this is more apparent than real, for now more surgeons are on the look out for the small lesions, and it is also possibly due to an increase in total hysterectomies with a wider exposure of the posterior cul-de-sac and utero-sacral ligaments. Others claim that the increase is due to the late age of marriage and the few subsequent pregnancies, if any.

Holmes reported an incidence of 26.0 per cent in 307 gynecological laparotomies. Meigs, in his private practice, found 36 per cent of his surgery cases to have gross evidence of endometriosis and 28 per cent to have a proven microscopic diagnosis. At the same time, on his charity service, 8.3 per cent of the cases had gross lesions and 5.3 per cent had a microscopic diagnosis. Hayden, in reviewing 4,500 gynecological surgery cases, found 10 per cent to have evidence of endometriosis.

The theories that have been postulated as

to the pathogenesis of endometriosis are as follows:

1. Activation of Celomic rests. (Novak)
2. Epithelial heterotopy dependent on inflammatory or hormonal stimulus (Meyer)
3. Lymphatic or hematogenous spread. (Halban)
4. Retrograde tubal menstruation. (Sampson)

Of the above theories, the one that is most widely accepted is activation of celomic rests, though there are cases in which the other theories are applicable.

Pathology

Endometriosis is similar to cancer in its growth, spread, invasion, and metastasis. Each individual growth menstruates into its lumen and grows centrifugally, invading normal tissue. The invaded tissue in turn opposes the invasion by an increase in fibrous tissue. As there is little fibrous tissue in the ovary, the cyst grows rapidly and tends to perforate or blow out. Such a perforation usually occurs just prior to or early in menstruation and gives symptoms of appendicitis or ruptured tubal pregnancy. On the other hand, if only seepage occurs, it causes an unusually painful period. This seeping menstrual fluid plasters the ovary to the posterior surface of the broad ligament, uterus, or any contiguous structure with characteristic dense, cancer-like adhesions. Thus late in the disease the large chocolate cyst of the ovary, the trademark of endometriosis, occurs. In addition to the ovary, the adherent endometrium may invade the peritoneum either directly or by spillage from the diseased ovary.

Early in the disease small spot-like lesions can be seen with surrounding fibrosis. Often octopus-like tentacles of endometrial tissue invade the fibrosis so that the lesion shows radiating stellate lines of contraction as if pulling neighboring tissue toward itself. The "spots" tend to coalesce and with their built-up, cancer-like nodules are pathognomonic of endometriosis. Such tumors cause extensive distortion and may cause stricture of the ileum, sigmoid, or ureters.

The endometrial tissue in the lesions may respond to the stimulation of estrogen to pro-

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duce the proliferative phase, or to progestin to produce the secretory phase, or to pregnancy to produce decidua in the stroma, or it may act as the basal layer of endometrium by not responding to ovarian stimulus.

Diagnosis

The diagnosis of endometriosis will be made more often prior to surgery if we keep in mind three points: 1.) the cardinal symptom, 2.) the pathognomonic sign, and 3.) the special susceptibility.

The cardinal symptom is increasing dysmenorrhea. It usually occurs if there are any symptoms at all. Here it should be brought to mind that the disease may be far advanced with no symptoms, or severe symptoms may occur from small, early lesions. The so-called dysmenorrhea exists as cramps or soreness in the lower abdomen just prior to, with or after each menstrual period and the severity of the pain increases with each period. Other symptoms that occur are dysparunia, pain in the pelvis when walking, riding, or otherwise jolting of the pelvis, painful defecation, low grade or acute bowel obstruction, or bladder irritation during each period, or unexplained sterility.

The pathognomonic sign is the hard fixed nodule usually felt by recto-vaginal examination of the utero-sacral ligaments or peritoneum of the posterior vaginal vault.

These nodules feel like cancer metastases and are often mistaken for such. However, if the patient is examined in between periods and again just before a period, the nodules will be found to be larger and tenderer than on the first examination.

Specialized susceptibility means women sexually dormant, either married or single, for it has been found that the disease rarely occurs before five years of menstrual life. Thus, a practical point in the diagnosis is the history of five years of uninterrupted menstruation before the onset of symptoms.

Treatment

Under treatment, a word might be said about prophylaxis. It is believed by many that if a woman is married by the time she is twenty-three years old and has a pregnancy every four to five years until the menopause, she would have no endometriosis. However in this day and time, women would probably prefer the disease to such prophylaxis.

A sure cure for endometriosis is castration either by surgery or x-ray, but this is not desirable in the young woman and in those who want children.

It is sound surgical judgment to be radical in exploring all suspected cases for when the disease is found early, symptoms can be relieved and occasionally fertility restored by conservative surgery.

Whenever a laparotomy is done on a woman in the child bearing age, and no contraindication exists, the posterior surface of the uterus, the utero-sacral ligaments, and the posterior cul-de-sac should be inspected. If any of the small spot-like bluish lesions of endometriosis are seen, they should be destroyed with the cautery. For this reason most men recommend that the abdomen be a mid line incision when performing an appendectomy in any woman during her menstrual life.

When possible conservative surgery should be done in all women under the age of forty-five. In some cases, however, the disease has become so extensive before this age that one has no choice but to remove all ovarian tissue. In about half of all these cases, it is possible to conserve some ovarian tissue.

To relieve symptoms where conservative methods are used, all lesions must be destroyed, either by excision or by cauterization with the small nasal cautery. The uterus should be suspended if not in normal position and the superior hypogastric nerve plexus should be removed. If this type of surgery can be done, 20 per cent to 25 per cent of these cases can be expected later to become pregnant. If symptoms reappear at a later date, castration can be accomplished with deep x-ray.

When pregnancy occurs after conservative surgery, the outlook for a normal prenatal course, and delivery, is as good as in any pregnancy.

The radical surgery which has been mentioned means removal of all ovarian tissue, both tubes, and part or all of the uterus. In some cases with far advanced endometriosis the adhesions binding all the pelvic organs together may be so dense that it is impossible to do a total hysterectomy without injuring the bladder or sigmoid. Here it is best to remove the ovaries and only that part of the uterus not densely adhered to the adjacent structures.

In those instances in which the endometrial lesions cause ideal obstruction, it is usually necessary to resect the ileum with or without

ileocolostomy or enterostomy. At the same time, a bilateral oophorectomy and, or hysterectomy is done as indicated by the pathology.

When the ureters are partially constricted by the endometriomas, removal of all ovarian tissue is indicated for within two or three months following this the lesions will regress sufficiently to allow the urinary tract to return to normal function.

Hormones which suppress menstruation should help, but not much success has occurred with their use.

Testosterone will suppress menstruation for many months, but will also cause a growth of hair if too much is used or if used over a long period of time. It is recommended in the treatment of menopausal symptoms after castration.

Estrogen will suppress menstruation but most men think it increases the symptoms. It should not be used after castration as it reactivates the remaining lesions.

Recently Karnaky reported excellent results with the use of large doses of stilbestrol over a period of three to six months, his rational being that with large enough doses to entirely suppress menstruation for three to six months, you have created a condition similar to pregnancy which is known to keep endometriosis from progressing. This preliminary report covered only thirty-seven cases, and in twenty-seven of these the diagnosis was made on history and physical examinations alone. While Karnaky is enthusiastic about the use of stilbestrol in the treatment of endometriosis, much more work will have to be done before it can be accepted.

In conclusion, endometriosis is an anti-venereal disease, a social economic disease raining its pelvic devastation much more frequently upon the higher social and economic strata of women. It can be prevented by early marriage and frequent pregnancies. The diagnosis will be made more often if we keep in mind the cardinal symptom, the pathognomonic sign, and the special susceptibility. It is a good surgical practice to be radical in doing a laparotomy on all suspected cases and in being conservative about removing organs once the abdomen is opened.

Endometriosis is the result of sterility, not the cause, and if conservative surgery can be carried out, 20 per cent to 25 per cent of

these individuals can anticipate a normal pregnancy.

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Control of Pain in Childbirth*

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THE subject might cause one to think that I am an anesthetist or an obstetrician. I am a general practitioner.

After returning from the army in 1945, I enrolled in Dr. Robert Hingson's postgraduate course for control of pain in childbirth, which was then being organized at the University of Tennessee. There we were given a practical course in the uses of continuous caudal and low spinal in the control of pain in childbirth.

At that time there were only three doctors in Mississippi who had received this special type training. Mississippi doctors present in this second class with me were Dr. Carr of Clarksdale and Dr. Simms of Oxford.

I was recently talking with Dr. Hingson and he stated that in a radius of 200 miles of Memphis that there were more doctors trained in the use of continuous caudal and spinal analgesia in labor than in the entire remaining area of the United States.

In the beginning I met with opposition to this method. My first patient on whom I used the continuous caudal technique was a lady who had had a previous caudal baby, and she came to me because she heard that I would use this method. She told me that she was the first patient on whom the other doctor had used the caudal technique.

I was very careful in selecting my cases; being sure that they would work, and that every thing was normal. Gradually the local public became less skeptical and patients would come to me because they were anxious to get this type of pain control. Out of three hundred and eighty deliveries I have used either a continuous caudal or a low dose spinal in at least ninety per cent; and in over 95 per cent of all hospital deliveries.

I am not qualified to discuss all the methods of control of pain in childbirth. I will discuss the methods that I used and believe to be the best and the safest for the mother and the infant.

I am indebted to Dr. Hingson for literature and statistics on this subject.

Obstetric analgesia and anesthesia begins with the patient's first visit to her obstetrician. One of the first questions a patient asks today is what method of pain relief she is going to receive.

Every woman should have impressed upon her that there is no such thing as absolute painless childbirth; and no woman should be promised any special type analgesia or anesthesia before she goes into labor.

The most important part in the practice of good obstetrics is that each patient should be individualized particularly as regards the type of pain relief that is suitable to her particular case.

Of primary importance in the control of pain is the recognition of it as a psychologic entity. Pain is distinctly a mental interpretation and cannot strictly be defined. The first duty of the physician is to allay the process of fear. This is accomplished not with drugs but with that something that makes a physician "my doctor."

The fear of the pains of labor in the hearts of women has been a contributing factor to childless marriages, and one of the major causes of one-child families in our present civilization. Dr. Hingson has in his files more than 4000 letters from childless women who state that if they can be guaranteed complete relief from labor pain, that they will undertake the rearing of a family.

There is certainly no field of medicine where confidence in her attending physician has as much importance as it has in the practice of obstetrics. Therefore any assurance that can be given a pregnant woman should be given as frequently as possible during pregnancy.

Tell a woman just what occurs with the onset of labor and what she should expect when labor has been enforced. As a result of the careful mental build-up during pregnancy the patient arrives in the labor room in a state of mind which makes her nervous system easily susceptible to whatever method of analgesia is employed.

Many women in the early stages of labor can be made happy and comfortable by reassurance from the attending physician, and

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that something will be given to relieve the pain as labor progresses.

Some writers believe that it makes for better motherhood if a woman is given no pain relief. The cries of women in travail called the part of obstetrics into being. And the obstetrician who overlooks this obligation is causing a retrogression of obstetrics to midwifery.

The time-honored conviction that babies fare better when the mother has no pain relief during labor has been dealt a fatal blow; for statistics now show that foetal neonatal mortality and stillbirths are more frequent in babies whose mothers had no method of pain relief applied during labor.

Recognizing that the principles of a prolonged narcosis in labor and general anesthesia for delivery are fundamentally dangerous for the baby, obstetricians in great numbers are filling the medical literature with reports of a greater salvage of infants through the management of labor and delivery with nerve conduction anesthesia; through techniques of local, pudendal, sacral, spinal, and continuous caudal. Since 1942 there has been published over two hundred and forty-two papers in the medical literature recording the results in more than 600,000 cases with continuous caudal analgesia used for the management of labor and delivery. Most of these reports have emphasized the well-being of the newborn infant who with this technique has escaped the penalty of transplacental narcosis from sedative drugs and general anesthesia.

The advent of continuous caudal and low dosage spinal has opened up new fields in the psychology of childbirth. One of the greatest psychologic factors as far as the mother is concerned is to hear her baby's first cry. This has been so clearly demonstrated since the use of continuous caudal and low dosage spinal analgesia. This technique has returned to womanhood the heritage which she had to sacrifice through the use of the various forms of anesthesia and amnesia. When a woman is given a caudal or low dose spinal type of analgesia, the psychology of the patient and the attendants in the labor and delivery room is entirely different from the management of a patient under the sleep-producing methods.

The doctor who regularly uses either of these methods of pain control is forced to alter his obstetric technique, because the progress of labor is changed; cervical dilatation is more rapid; there is a great increase in the number of occipito-posterior and transverse arrest

presentations. It is necessary to use low forceps to extend the head over the perineum in most of the cases. The second stage of labor is shortened due to the use of forceps. The doctor becomes more skilled in the use of forceps due to his more frequent usage. If forceps are correctly applied and used, there is no danger of injury to the infant. I use the solid blade type of forceps, believing that there is less danger of injuring the baby.

The room where the analgesia is given must be specially equipped with oxygen, vaso-pressor drugs, intravenous fluids, a sterile spinal set, and an adjustable table.

The only danger to the baby is that of anoxia which might develop during inexperienced management of patient whose systolic blood pressure is allowed to fall to hypotensive levels of 90 to 80 mm. of mercury.

The doctor must have an understanding of the principles of gravity. Autotransfusion by elevating the lower extremities to right angles to the long axis of the body will promptly restore from 700 to 400 cc. of blood to the circulation.

Surgeons, obstetricians and anesthetists in approaching the study and use of these methods will soon find from experience that prejudiced misconception concerning unwarranted complications reported and associated with these methods will vanish before a scientific application and understanding of this advance in the conquest of pain.

The type of pain control will vary with the individual patient. In some the continuous caudal is preferred, especially in those primiparas making slow progress and not expecting to deliver for four to eight hours. For terminal labor and obstetric delivery in most multiparas and many primiparas, I prefer a low dosage low spinal; and it is most successfully carried out during the last one to three hours of labor.

A spinal puncture is one of the easiest procedures in medicine, and with the addition of a few technical details the analgesia is easily and safely given. There is no method of pain relief in obstetrics which is as prompt and complete as that provided by spinal analgesia.

However, certain warnings should be amplified concerning the use of this method. The subarachnoid pressure of a pregnant woman in labor presents a picture of turbulent oscillations synchronous with uterine contractions and bearing down efforts.

If the spinal injection should be made during a hard contraction the solution might be carried to dangerous heights; the spinal canal contains about 20 cc. of spinal fluid. The things that effect the height of the level of analgesia in giving a spinal are the level of the puncture, the position of the patient, the size of the spinal needle, the rate of injection, the direction of the bevel of the needle. With a small spinal needle in the fourth interspace with the bevel directed up and a rapid injection made, a dangerous height may be obtained. The injection rate should be five seconds for 1 cc. of solution. I am not qualified to discuss the various drugs that may be used. One should use one drug, know its action, its dangers, and result obtained. I use a 2 per cent pontocain solution, mixed with 10 per cent glucose in order to prolong the analgesia, and to make the solution a hyperbaric one.

I make the injection in the fourth interspace with the patient sitting up and inject only 5 to 10 mg. (1 cc.) of the 2 per cent solution which is mixed with 1 cc. of the 10 per cent glucose solution. In many of my cases all the pain is relieved, and the patient is still able to use the lower extremities.

No solution should be injected into the spinal canal with the patient sitting up unless it is a hyperbaric one. At the time of the spinal, I give $3/8$ grain of ephedrine in order to keep the B. P. from dropping. The patient is allowed to sit up 30 to 60 seconds before lying down. The blood pressure is taken often during the first thirty minutes.

The contraindications are infections of skin along the course of needle, hypotension with B. P. below 90, disease of C. N. S., tumor, P. A., severe cardiac decompensation.

Dr. Robert Hingson and others now are using a method of continuous spinal analgesia in obstetrics for cesarean sections.

Dr. John Ulley of Philadelphia, Pa., reports the experience of the delivery of 300 patients by section, under continuous spinal analgesia with no maternity deaths. And all the babies except the stillborn showed no anoxia, cried at once, and required no resuscitation. Most of us have had an experience where it was necessary for one of the doctors to attend to the anoxia of the baby thus being forced to leave the mother at the most serious part of the operation.

The time, care and skill required for proper conduct of a continuous caudal type of pain control are the principle limitations to its use.

It should be emphasized that continuous caudal was designed to relieve the pains and not the early discomforts of labor. Should a patient be complaining too much before it is time to begin the spinal or caudal, I give 100 mg. of demerol.

The location of the sacral hiatus at the lower end of the spine, becomes very easy after a certain amount of practice. There is a V shaped hiatus at the lower end of the spine.

After raising a small wheal over the hiatus with a small amount of metycaine, a special 19 gauge malleable stainless steel needle is then inserted into the hiatus for a distance of two inches. There are three sizes of these needles, the 2-inch, $2\frac{1}{2}$ -inch and 3 inch. There is less danger in using the two-inch size. Should blood appear it would indicate that the needle is in the canal and has pierced blood vessels in the highly vascular posterior wall of the canal. The needle should be withdrawn a little, rotated and reinserted.

Should spinal fluid appear on aspiration, the needle should be withdrawn and the case classified as undesirable for this type analgesia.

To minimize the danger of an intraspinal injection further, a trial dose of 8 cc. of the solution, either metycaine or pontocaine is injected, and further action delayed for ten minutes; to see that a low spinal does not ensue. Without relief of pain or diminution of motor power in the lower extremities in ten minutes after the injection is made, one can safely assume that a subarachnoid puncture has not been made—and the remaining 20 cc. of the solution injected.

Indications that the solution is being injected into the subdural space are:

The patient experiences a peculiar sensation along the course of the sciatic nerve. There will be a progressive analgesia; there will be a relief of abdominal uterine cramps in five to fifteen minutes, and a relaxation of the rectum; there will be an increase in temperature of the lower extremities with an increase in color, due to a vasodilation. The blood pressure may be lowered.

Failure to relieve pain after thirty minutes indicates that the solution was outside the sacral canal.

Contraindications to the use of a continuous caudal are: The cervix should be dilated three fingers before caudal analgesia is begun. A caudal should not be given to patients with easy precipitate labors or to patients in whom

the doctor expects to do a version, or patients who come into the hospital in the terminal part of the second stage, or patients who are apprehensive, nervous, and desirous of being asleep when the baby is born, or patients who fear caudal analgesia because to them it is an experiment, or patients with gross deformities of the canal. Graften estimates that at least 5 per cent have bony deformities. Extremely obese patients and those with infections at the site of injections should not be given the anesthesia.

The obstetrical complications are placenta previa, abruptio placenta, cases with a definite disproportion, multiparas with a floating engaged head; also in the birth of predetermined dead babies.

Dr. Clifford B. Lull reports on a series of 200 cesarean sections done under continuous caudal analgesia and states that the difference in results obtained in the use of a spinal and a continuous caudal is very slight in regard to the convalescence of the mother.

He states with emphasis that they had no trouble with the babies.

A U. S. Public Health report stated that if the method of continuous caudal analgesia could be applied to all deliveries in the United States with the same results as in Philadelphia Lying-in Hospital, the present estimated loss of about 125,000 viable infants through stillbirths and deaths within the first week of life could be cut in half.

In summary, first I wish to re-emphasize the primary importance in the control of pain; of the recognition of it as being a psychologic entity. Second, it should be emphasized that these two techniques are precision ones requiring a scientific application and understanding of these methods, and the importance of having all the safe grounds in the labor room.

Third, the salvage of infants in itself should make this method the one of choice.

Fourth, in the use of this method the obstetrician is forced to improve his technique in the practice of obstetrics.

The Recognition of the Early Manifestations of Rheumatic Fever*

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INTRODUCTION—Rheumatic fever has long been recognized as an acute infectious disease of unknown etiology presenting the clinical picture of fever, polyarthritides, and myocarditis and characterized by exacerbations and remissions. It was originally thought to be a disease of the northern temperate zone and was considered to be seldom seen in the southern latitudes of this country; however, during the past few years it has become increasingly evident that acute rheumatic fever is seen throughout the United States. It does not always present the fulminating clinical picture of the acute illness and is more often seen in the sub-acute or chronic form. Levine has stated that the term "acute rheumatic fever" is an extremely unsatisfactory one because frequently there is **neither rheumatism nor fever**. He has suggested rather that we adopt the term "rheumatic state." It is not within

the scope of this paper to cover the entire subject of rheumatic fever, but rather to focus attention upon the recognition of the pathology and symptomatology of the less obvious forms of the disease.

Etiology—The etiology of rheumatic fever is unknown and as in all diseases in which we do not know the cause, numerous theories have been offered. I shall only briefly mention the hypotheses currently proposed: 1) that the disease is in some way related to infections from group A beta hemolytic streptococci, either caused by an exotoxin of these organisms or by the entrance of a virus when the body resistance is weakened by repeated hemolytic streptococcal infections; 2) that it is a streptococcal toxemia not necessarily accompanied by bacteremia, and 3) that it is an allergic tissue response to these organisms. Future research will give us the answers which we are seeking, but the relationship of the disease to

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repeated upper respiratory infections cannot be disregarded.

Pathology—We cannot readily understand and interpret the clinical symptomatology of a disease unless we know the pathology which that disease produces in the body. Therefore it is of utmost importance that we understand the pathology of rheumatic fever if we are to interpret correctly the sometimes seemingly bizarre symptoms which we encounter in the sub-acute and chronic forms of the disease. Rheumatic fever is a generalized systemic disease affecting the entire cardiovascular system from the heart to the capillaries. It attacks the synovial, endothelial and serous membranes of the entire body and it thereby involves the conjunctiva, nasopharyngeal mucous membranes, pleura, peritoneum, meninges, endothelial lining of the heart and blood vessels, and the synovial membranes of the joints and bursae. The pathogenesis in which we are most interested, of course, is that of the heart. From a rheumatic endocarditis the disease progresses slowly to a myocarditis and sometimes a pancarditis, terminating eventually in valvular disease, cardiac arrhythmias and finally decompensation. Laseque has said that the disease "licks the joints, pleura and the meninges, and bites the heart."

Symptoms—We are all familiar with the symptoms of acute rheumatic fever in which a child gives a history of acute follicular tonsillitis two to four weeks previously and is suddenly taken ill with fever of 102-104 degrees, painful swollen joints, with the pain and swelling migrating from one joint to another, leukocytosis, increased sedimentation rate, a mitral systolic murmur and perhaps choreiform muscular twitchings. Unfortunately, however, the disease does not always present itself to us so boldly and diagnosis is not always so simple. When the symptoms are slight they are frequently overlooked by both the patient's family and the family physician, and if they remain unrecognized they lay the foundation for subsequent rheumatic heart disease. In no other group of patients is it more imperative for us to take time to obtain a careful history and make a thorough physical examination. How many of us are familiar with the following type of history: a mother brings Johnny, age ten, into the office and says, "Doctor, Johnny came home from school yesterday complaining of the stomachache and being nauseated. He had the same trouble about a month ago and he just won't eat. He's underweight and nervous and I wish you'd give him

a tonic to build him up." Several differential diagnoses immediately flash through our minds, but if we will take a careful history we will probably also find that Johnny has been underweight for several months, he has had frequent attacks of tonsillitis or other upper respiratory infections, that he gives a history of occasional epistaxis, he complains of headaches rather frequently and occasionally of pains in his arms or legs at night. He also may complain of occasional vague pains in his chest with or without a slight cough, he has no appetite and he complains rather frequently of nausea and generalized abdominal pain and sometimes of otherwise unexplained vomiting. He may have urinary frequency, mild sweats, and he is a nervous fidgety child. As we observe this child on the examining table we note that he is underweight, pale and anemic, he shows marked facial pallor and he is continuously in motion, unable to sit or lie still upon the table. **Physical examination** reveals that he has a temperature of 99 degrees, or he may have none at this time, but his mother states that he had a little fever when he came home from school yesterday afternoon. His pulse rate though is 120-130 of regular rhythm and volume, his blood pressure is within normal limits and he is ten to fifteen pounds underweight. The remaining positive physical findings are limited to his heart where we hear a mild or moderate apical systolic murmur and a mild diastolic murmur in the third left interspace at the sternal border. His abdomen reveals only generalized abdominal tenderness. Examination of his extremities may reveal the presence of rheumatic nodules. His blood count is within normal limits except for a moderate anemia, his sedimentation rate is normal, his urinalysis shows an occasional white or red blood cell, x-ray of his chest is normal with no cardiac enlargement, his initial E K G may be within normal limits and stool examination and agglutination tests are negative.

Laboratory Findings—Unfortunately we have no definite laboratory tests for the diagnosis of rheumatic fever, which makes it all the more important that we take a careful history and make a thorough physical examination. In acute fulminating cases there is a relative leukocytosis and an increased sedimentation rate, however, in milder cases the white blood count may be within normal limits and the sedimentation rate normal. In early myocarditis the chest x-ray shows the heart measurements to be within normal limits. In early rheu-

matic myocarditis the E K G may be within normal limits before any alteration in conduction time and prolongation of the P-R interval has occurred.

Differential Diagnosis—We must consider in our differential diagnosis tuberculosis, undulant fever, disseminated lupus erythematosus, periarteritis nodosa, subacute bacterial endocarditis, and parasitic infestation.

Diagnosis—Upon what points then do we consider a diagnosis? With the pathology of rheumatic fever in mind we see a child with a low grade febrile disease manifested by 1) epistaxis denoting capillary damage, 2) nausea, vomiting and generalized abdominal pain denoting rheumatic peritonitis, 3) mild chorea and headaches indicating meningeal involvement, and 4) tachycardia with systolic and diastolic murmurs indicating early myocarditis. Let us now consider the most important of our physical findings namely those referable to the heart. In no other disease do we more consistently find a tachycardia so much out of proportion to the temperature curve, for we find a pulse rate of 100-140 with a temperature of 99-100 degrees. Next, we consider the heart murmurs. Keeping in mind our pathology, we know that rheumatic fever begins its pathogenesis in the heart by affecting the endothelial lining of the mitral and aortic valves. It progresses to a rheumatic carditis and occasionally to a pericarditis, and through the course of months and years results in mitral stenosis, aortic stenosis and cardiac arrhythmias. In early rheumatic myocarditis we are usually able to hear with the stethoscope significant murmurs long before we can find electrocardiographic evidence of prolonged conduction time. In rheumatic carditis we most frequently hear a soft blowing apical systolic murmur due to a relative mitral insufficiency and very shortly thereafter an aortic diastolic murmur in the third left interspace at the sternal border due to relative aortic insufficiency. This murmur can usually be heard in the third left interspace long before it is heard over the aortic area. The mitral diastolic murmur of mitral stenosis is not heard early in the disease since the stenotic process takes months and sometimes years to develop.

Treatment—The most important aspect of the treatment is the treatment of the myocarditis and, as in all infections, myocarditis the most important treatment is absolute rest in bed. The patient should be kept on absolute rest in bed for at least one month after all signs of activity have disappeared and until

the pulse rate has returned to normal. In addition the patient should be given large doses of salicylates by mouth (1 gr. per pound of body weight per day), sufficient sedatives to keep the patient quiet in bed, hematinics, and a high vitamin, high caloric diet. In addition several investigators have suggested the use of vitamin E. The sulfa drugs and penicillin have been found to be of no value in the treatment of rheumatic fever other than as prophylaxis from subsequent respiratory infections after the acute activity has subsided. Unfortunately economics must enter into our therapy at times and you may ask "Is it worth it" to take this child out of school and put him to bed for two or more months with such a smouldering disease. Certainly we do not hesitate to put a tuberculous patient at absolute bed rest for periods of months or years and we must look upon the treatment of rheumatic patients in a similar light until we learn the etiology and have an antibiotic with which to combat the disease. Obviously sanatorium care of rheumatics is optimal, but unfortunately the facilities are lacking. The justification for extended treatment lies in the reduced mortality rates. The figures of the King's County Cardiac Clinic show that they selected two groups of rheumatic children as near alike as possible as to age, duration of disease, number of attacks and age at onset of disease and observed them for seven years. Of 373 treated, eight died; of 312 untreated, twenty-one died—a mortality rate three times as great in untreated cases. I think we will all agree that treatment is worth that price.

Summary—Rheumatic fever is an acute infectious disease of unknown etiology characterized by exacerbation and remissions and seen more often in these latitudes in the subacute or chronic forms.

The relationship of the disease to repeated upper respiratory infections, usually with group A beta hemolytic streptococci cannot be disregarded.

Rheumatic fever is a generalized systemic disease involving the cardiovascular system and the synovial and serous membranes of the entire body.

There are no reliable laboratory tests for the diagnosis of early rheumatic fever.

Absolute rest in bed until one month after all signs of activity have disappeared and until the pulse rate has returned to normal is essential to prevent permanent heart damage during the active phase of the disease.

Diabetic Acidosis and Coma*

BEN HAND, M.D.

Greenville, Miss.

LACK of control of severe diabetes may lead to diabetic acidosis and diabetic coma. The latter is a serious medical emergency which calls for prompt and energetic treatment based on sound physiologic principles if the life of the patient is to be saved.

Fortunately diabetic coma does not arise without ample warning. Therefore, it can be averted if diabetic acidosis is either prevented or recognized early and treated effectively. Usually thirst and polyuria are present for a variable period of time before evidences of ketosis make their appearance. Results of tests of the urine for glucose are strongly positive, and with the development of ketosis the results of tests for acetone and diacetic acid also becomes positive. The early symptoms of acidosis are likely to be inconspicuous and deceptive. Weakness, flushing of the face, headache, anorexia, nausea, pain in the legs, abdomen and back, shortness of breath on exertion and apathy are among the early symptoms. Later, all these symptoms are accentuated, and vomiting, dehydration, air hunger, somnolence and finally, coma, develop.

The precipitating causes of acidosis and coma are many. Some of the more common causative factors are as follows:

1. Omission or insufficient amounts of insulin.
2. Acute infections, respiratory infections being the most frequent offending cause.
3. Fractures, and surgical procedures.
4. Hyperthyroidism.
5. Pregnancy.
6. Dietary indiscretion. However dietary indiscretion is only rarely the precipitating factor and a careful history will usually disclose some other more important factor such as inadequate amounts of insulin or some intercurrent infection.

To appreciate diabetic acidosis and coma fully a review of the pathologic physiology is essential. With the development of acidosis almost all ingested CHO is excreted in the urine in the form of glucose. In addition, virtually

all sugar derived from ingested or body protein is lost in the urine. As a result, accelerated catabolism of fat and protein occurs in an effort to meet the energy requirements of the body. Sooner or later, the rate of formation of acetone bodies exceeds the rate of their utilization in the tissues, so that they accumulate in the body fluids and are excreted in the urine and expired air. A state of diabetic acidosis then exists.

When this has occurred, secondary disturbances of fluid and electrolyte balance has resulted. The passage of large amounts of sugar, ketone bodies, nitrogenous products and electrolytes invokes the excretion of tremendous amounts of water. Vomiting as a usual complicating factor further enhances the loss of fluids and electrolytes. All of this contracts the volume of extracellular fluid and ultimate loss of intracellular fluid as well, resulting in severe dehydration which may be forerunner of renal insufficiency, anuria and perhaps circulatory collapse.

It is well to recall that before ketone acids are excreted in the urine they are neutralized by basic substances. This is at first accomplished by ammonia, but as acidosis progresses the ammonia mechanism is swamped, accentuated by renal insufficiency with diminution of the ability to produce ammonia, resulting in loss of sodium and other basic ions in the urine. Further there is loss of chlorides in the urine and in vomiting, when that occurs, and it does in the biggest number of cases.

Of course a common finding in untreated diabetic acidosis is a low CO₂ combining power, this being an indirect measure of the amount of sodium lost through the kidneys plus the amount which is held in combination with acid substances in the body fluids. Clinically the CO₂ combining power is a better index as to the severity of the acidosis than is the elevation of the blood sugar, as there is no reliable relationship between the hyperglycemia and the degree of acidosis.

Each patient in diabetic acidosis and coma is an individual problem and no fixed rules can be completely followed. However, treatment must be instituted without delay and the essentials of basic principles are: prompt and

*Read before the regular semi-annual meeting of the Delta Medical Society, Cleveland, Miss., April 8, 1948.

continued administration of insulin in adequate doses and the replacement of the depleted reserves of water and electrolytes. It is superfluous to say that this patient should be treated in a hospital where frequent determinations of carbon dioxide combining power, blood sugar and urinalysis can be done, as difficulties in treatment will be diminished if the patient is subjected to careful laboratory control.

In considering the basic principles of treatment the subject of the administration of insulin should naturally be the first of these to be discussed. If an adequate primary dose of insulin has not been given before the patient reaches the hospital, it should be given at once, relying at the outset on soluble insulin. The initial dose may be calculated after the method of Woodyatt, that is, the estimated initial injection will be two units per kilo of body weight. It is wise to administer the insulin at two or more subcutaneous sites to give rapid absorption. Immediate and frequent subsequent determinations of the CO_2 depression and blood sugar levels should be made. Usually a second maximal dose of insulin is administered within two or three hours, further amounts then being determined from the result of the laboratory examinations and clinical judgment. It has been a practice to be somewhat over cautious in the giving of insulin in diabetic acidosis, but we feel that death in diabetic coma is more apt to occur from undertreatment than from overdosage of insulin. The transition from diabetic coma to insulin shock or hypoglycemic coma is rarely so rapid that it is not without ample warning, particularly where precise laboratory control is used as a basis for determining the subsequent dosages of insulin. When recovery is obvious, one must not become lax, for often after ketosis the diabetes is more severe and relapse into coma is not uncommon unless caution is used and adequate treatment sustained.

The second basic principle to recall is the replacement of the electrolyte and water loss. These patients are always severely dehydrated and restoration of hydration is essential to recovery. The most effective method is the giving of isotonic solution of sodium chloride intravenously. At the outset, when the initial samples of blood are taken, the venoclysis can be begun. The first 1,000 to 2,000 cc. of saline can be given rather rapidly, even when there is evidence of circulatory failure, for this failure is usually due to contraction of blood volume rather than to heart muscle weakness. If the CO_2 combining power remains persistently below 15 volumes per 100 cc. of plasma, and this is unusual, while the blood sugar level drops, it is wise to administer 500 cc. of 5 per cent sodium bicarbonate solution slowly.

There is nothing to be gained by I.V. administration of glucose early in the treatment of coma for the patient continues to excrete large amounts of unutilized glucose during about the first six hours of treatment. Later, when the blood sugar level has dropped, glucose can be given intravenously if the patient is still unable to tolerate a liquid diabetic diet by mouth.

General care of these patients amounts to the placing of the patient in a warm bed, and conserving his body heat by means of blankets. Gastric lavage with a solution of 5 per cent sodium bicarbonate should be carried out and after completion, about 300 cc. may be left in the stomach. Appropriate measures for treatment of acute infections, of course, should be promptly instituted.

In closing, the basic principles of treatment of diabetic acidosis and coma are the prompt and continuous administration of insulin, in adequate doses, and the replacement of depleted body reserves of water and electrolyte. If energetic treatment is carried out, many patients, that otherwise would be lost, may be saved.

The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

Drs. Felix Underwood and Percy Wall after ably representing our state medical association at the annual meeting of the American Medical Association at Atlantic City, are now spending some time in Europe.

On commencement day at Tulane Dr. E. C. Parker attended his class reunion, the class of 1899, the fifty-year boys. In this class there were 102 graduates. As far as he knows now eighteen are still living. Dr. J. W. D. Dicks, formerly of Natchez and now of Philadelphia, Pa., was a member of this class. He is one of the choice spirits in Mississippi medicine. Dr. Ed Newell was another in this class. Dr. Ed lives in Chattanooga. So the only member of the class now living in Mississippi is Dr. Parker, a surgeon of fine ability, a splendid citizen, and a doctor with outstanding medical integrity.

The annual meeting of the Mississippi State Medical Association at Biloxi May 10, 11, 12, was one of our best. The scientific program was excellently handled by the section chairmen, the spirit among the doctors was most cordial, the meeting place was very convenient and pleasant, the general meetings exceptional. The Woman's Auxiliary especially did much toward making the meeting a fine success. President R. B. Caldwell rounded out a successful year of strenuous, cooperative effort. His address contained constructive thinking. Dr. Boswell as orator did a fine job. Dr. O'Mara was on duty all the time to make things profitable and pleasant, while Secretary T. M. Dye filled his role with usual efficiency and affability.

Dr. B. S. Guyton of Oxford is the president-elect. He is known throughout the nation in his specialty, the eye, ear, nose and throat and as a medical dean at Ole Miss. He has been active in organized medicine all of his professional life and is the backlog of medical integrity in every way. The house of delegates voted one hundred per cent for a four-year medical school and Dr. Guyton is looked upon as a sound engineer to lead us to the type of school our state should have.

The meetings on Monday brought many doctors to the convention, the pediatricians and the obstetricians having their usually fine attendance, plus the new organization, the state branch of the Academy of General Practice. It was well attended with Doctor S. S. Kety presiding as president and Dr. S. K. Johnson as secretary. The Academy was honored by the presence of President Elmer C. Texter of Detroit and Mrs. Texter. Also Dr. Sanders of Louisiana. Dr. John Howell was elected incoming president. The organization is growing fast and the indications are that it will serve a fine purpose.

The Fifty-Year Club held a splendid meeting. Dr. Rudolph Matas, the guest speaker, paid a wonderful tribute to the memory of the beloved Dr. W. A. Evans. It was informative, inspiring, touching. A certificate of membership was delivered to Dr. Matas by Dr. Felix Underwood. Dr. Seale Harris was elected to membership also. Special guests out of state were Drs. Fishbein who made a most appropriate talk, Seale Harris of Birmingham, Mr. C. P. Loranz, secretary-manager of the Southern Medical Association and Dr. L. H. McDaniel of Tyronza, Ark. Officers are: Dr. W. H. Frizell, president, Dr. W. L. Little, vice-

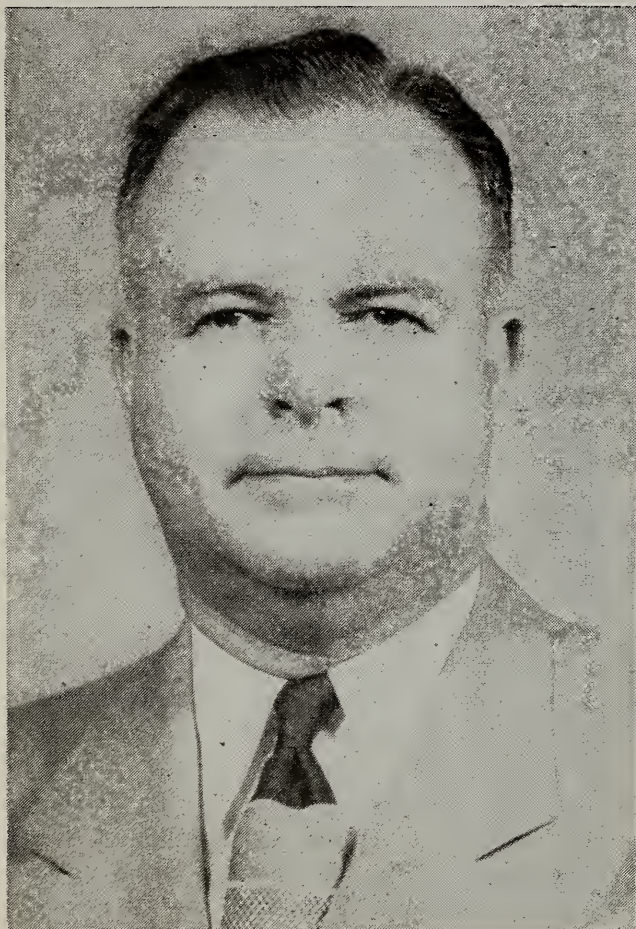
president, Dr. Felix Underwood, recording secretary, and Dr. W. H. Anderson, sponsor and corresponding secretary.

The banquet night was a highlight at the convention with Dr. Morris Fishbein as the orator of the occasion. He is the master after dinner speaker of the nation in the medical profession.

The Auxiliary luncheon with the able and attractive Mrs. H. K. Avent presiding, was one of the most memorable features of the convention. Dr. Fishbein was the speaker for this occasion also. Mrs. Gus Street of Vicksburg is the charming incoming president of the Auxiliary.

The next meeting will be held in Jackson, Mississippi, May 1950.

NEW PRESIDENT



Dr. B. B. O'Mara, Biloxi, Miss.

Dr. Braxton Bragg O'Mara is now president of the Mississippi State Medical Association. He served well as president-elect. Dr. O'Mara is a native of Mississippi, born in Pike County in 1896, graduated from the McComb High School and finished his two years in medicine

at Ole Miss. He graduated from Emory University in medicine in 1924. On the staff of our State T. B. Sanatorium from 1925-1930, he continued his work with tuberculosis as a member of the staff of the United States Veterans Administration from 1930 to 1935. Since 1935 he has been in private practice in Biloxi.

Dr. O'Mara possesses a fine personality and loves doing good deeds for others. At the recent meeting he was on the job all the time for its success. "Whatever his hand finds to do he does it with his might." He ranks high in the practice of medicine and is an able leader in organized medicine. As president of the association this year he will reflect much credit on the profession. His purposes are high, he is full of good cheer and good will, and his medical integrity is not to be questioned.

Dr. O'Mara is a strong believer in our state having a good four-year medical school and his desire always will be for the people to have the most efficient medical service.



This picture was taken at the luncheon of the Fifty-Year Club. Dr. Rudolph Matas of New Orleans on the left, speaker of the occasion, paid tribute to the late Dr. W. A. Evans who was president of the club. No one else could have done it as Dr. Matas did. His tribute was informative, eloquent, inspiring, and tender, revealing his sincere love for a friend and a comrade, his Barbashela.

Dr. W. L. Little (center) was selected last year and again this year as the practitioner most outstanding in this state. For more than fifty years he has been out on the firing lines of civil practice. He is an able practitioner,

outstanding in organized medicine, and a great Christian citizen.

On the right is Dr. Seale Harris of Birmingham, the embodiment of Southern medicine, outstanding internist, writer, statesman, and beloved friend to scores of Mississippi physicians. He was voted into membership of the club.

NATIONALLY RECOGNIZED



Dr. Felix J. Underwood, Secretary and Executive Officer of the Mississippi State Board of Health, has been invited by the Surgeon General, Dr. Leonard A. Scheele, to accompany him to Rome, Italy, for a meeting of the World Health Assembly Number Two, beginning June 13 and lasting three weeks.

Doctor Underwood will attend the American Cancer Society in Atlantic City, June 6-10 and will leave New York on the evening of June 11 by Constellation plane arriving in Rome, Italy, the evening of the June 12 at 11:00 p.m. via Newfoundland, the Azores and Madrid.

The Surgeon General and Doctor Underwood will join several members of the United States delegation who will leave New York on the evening of May 31 on the Steamship Saturnia. This boat will dock at Genoa on June 6 and the party will go by train from Genoa to Rome.

FELIX JOEL UNDERWOOD, M.D.

An outstanding Mississippian, Dr. Felix Joel Underwood, has shown unusual interest in building up his native state. He has furnish-

ed guidance and leadership in medical, hospital, nursing, dental and other fields as well as in public health and welfare. Honors which have come to him are state, national, and international.

When Doctor Underwood became state health officer almost twenty-five years ago, diseases such as tuberculosis, diphtheria, typhoid fever, and malaria were responsible for thousands of deaths each year. Typhoid fever alone was causing over three hundred deaths a year. There were only eight full-time public health departments in the counties as compared to the present time when only five counties are without full-time public health programs. Citizens of the state now have excellent health advantages and continued improvement is planned for the years ahead. Throughout the years, Doctor Underwood has devoted considerable attention to planning maternal and child health activities but in all fields of public health he has shown vision and a real understanding of current problems.

Doctor Underwood has served as president of the Mississippi State Medical Association, the Southern Medical Association, the American Public Health Association (and Southern Branch), and the State and Provincial Health Authorities of North America. For many years, he served on the Commonwealth Fund's Public Health Committee (later known as the Technical Board on Public Health). He also was a member of the Board of Scientific Directors of the Rockefeller Foundation for three years.

The state health officer is now serving as vice-chairman of the American Board of Preventive Medicine and Public Health. He also serves as special consultant to the Surgeon General, United States Public Health Service, and consultant for the National Advisory Mental Health Council. He is a member of the Advisory Board on Health Services of the American National Red Cross. At the University of Mississippi, he is associate in public health. Also, he serves as a member of the State Medical Education Board and an ex-officio member of the Mississippi Commission on Hospital Care. For a number of years he has served as president of the State Board of Examiners for Nurses. He is an honorary member of the State Dental Association. He is a member of the staff of the Baptist, Charity, and St. Dominics hospitals in Jackson; a fellow of the American College of Physicians; a fellow of the American Public

Health Association, and diplomate, American Board of Preventive Medicine.

Doctor Underwood's first health appointment outside of the United States was in 1935 when he was official delegate to the Seventh Pan American Child Congress, Mexico City.

Accepting Surgeon General Leonard A. Scheele's invitation to accompany him to Rome, Italy, for the second World Health Assembly beginning June 13 and lasting three weeks, Doctor Underwood will go outside the United States for the second time on a health mission. The Surgeon General and Doctor Underwood plan to leave New York on June 11 by plane arriving in Rome, Italy, on the twelfth.

Mississippi and Mississippians are fortunate in having a leader whose ability has been recognized many times and upon many occasions and who has brought to his own people unusual advantages in health, welfare, and other fields.

ANENT THE SOCIALIZATION OF MEDICAL SERVICE

by Felix J. Underwood, M.D.

The doctors and hospitals of Mississippi make possible the carrying out of a splendid program of diagnosis and treatment of cancer already recognized as one of the best programs in the country. Cancer is a great killer of our people and our physicians and hospitals are putting up a splendid fight in cooperation with the Mississippi Division of the American Cancer Society and the State Board of Health to bring this disease under control. Physicians contribute their services without pay to indigent cases. Patients who are able pay their own way, but those who cannot pay are adequately cared for by a service of love from doctors, hospitals, and our State Cancer Control Division. The disease, cancer, is sure to be conquered just as so many baffling diseases of the past have been wiped out by the findings of research laboratories, physicians, hospitals, and trained public health people.

Yellow fever is of historical interest only. It has been definitely wiped out in all counties having a progressive medical profession and an alert public health service.

Only an occasional case of smallpox is reported, and that these rare cases are caused by the neglect of those who have it to keep up their vaccination has been well known and effective for almost 200 years.

Cholera is a disease of the past. It is confined to its home in the valley of the Ganges and will never be seen again in civilized countries.

Syphilis has been reduced more than 50 per cent within the past ten years.

The nutritional status of our people has vastly improved within recent years due to a better knowledge of nutrition by physicians and public health workers and through the untiring efforts of those who specialize in the field of nutrition. The people now know what to eat and most of them are eating very well.

Hookworm as a disease no longer exists in this country. We do still have hookworm infestation of many people, but the worm burden as a rule is light.

Rheumatic heart disease is receiving more and more intelligent attention by the medical profession, public health authorities, and informed laymen.

We have unsatisfactory distribution of medical service, but in spite of this handicap, our people are receiving at the hands of the medical profession far better medical care than any country having socialized medicine. This is no idle statement, but the whole truth and nothing but the truth. Make your own investigation if you like, and it may well be your considered opinion that this statement will stand up under investigation which seeks only the truth and does not seek to make out a case for or against socialized medicine.

Blue Cross, Blue Shield, and other splendid plans in this country are making available medical and hospital service to increasing numbers of people every year. Within a reasonable time they will blanket the entire country, these humanitarian plans within the ability of most people to have.

With medical and hospital care for all of our veterans, Social Security, old age and survivors' insurance, unemployment insurance, Red Cross medical and hospital care in all disasters, retirement pay for those qualifying to receive it, the generous assistance of the federal government and the state giving aid to many especially the indigent in a sensible organized way and a continued willingness of our physicians, surgeons and hospitals on occasions which require the spirit of "I am my brother's keeper," and lastly, the fine achievements of preventive medicine and public health working hand in hand with the medical profession, it appears unwise, even silly, for this country to embark on a vast additional expenditure of multiplied billions of dollars, copying after Germany, England, New Zealand and other impoverished countries of Europe to socialize medicine, dentistry, and eventually everything else in our country.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson
Otolaryngology—Charles R. Hume
Ophthalmology—Edley Jones, Vicksburg
Obstetrics and Gynecology—J. F. Lucas, Greenwood.
Orthopedics—Thomas H. Blake, Jackson.
Public Health—Felix J. Underwood, Jackson.
Pediatrics—Harvey F. Garrison, Jackson.
Radiology and Roentgenology—Karl O. Stin-gily, Meridian.
Pathology—R. M. Moore, Vicksburg, Miss
Surgery—W. H. Parsons, Vicksburg.
Urology—Temple Ainsworth, Jackson.

PEDIATRICS

A NEW TECHNIQUE FOR REPLACEMENT TRANS-FUSION IN THE TREATMENT OF HEMOLYTIC DISEASE OF THE NEWBORN INFANT—Douglas P. Arnold and Kenneth M. Alford, Children's and Millard Fillmore Hospitals, Buffalo, N. Y., *Journal of Pediat.* 32:113-18, February 1948.

"The use of umbilical vein for replacement transfusion in erythroblastosis fetalis has been described. Since this vessel is thrombosed after twelve hours and since a decision concerning the need for transfusion may not be reached before this time, the saphenous vein was used instead.

"The approach used is high in the groin. A point midway between the superior iliac crest and public tubercle is located and a transverse incision 1 to 1.5 cm. below this point is made, running parallel to Poupart's ligament for a distance of 1 to 2 cm. The vein is located and an 18 to 19 gauge Diamond plastic catheter is threaded into it, extending up to the inferior vena cava. At some point in this region a free flow of blood is met and from here satisfactory withdrawal may be accomplished. Twenty cubic centimeters of blood are alternately withdrawn and injected until approximately 500 cc. has been exchanged. This effects an 80 per cent to 85 per cent replacement of the blood volume. The exchange is not hurried and should take one and one-half to two hours to complete. The blood introduced is Rh-negative compatible blood, and because of the large amount given, should be slightly warmed.

"After the procedure it is customary to give calcium gluconate to combat the effect of the citrate solution used in bank blood. It is given slowly and in no greater amount than 10 cc. of a 5 per cent solution. For three days after transfusion, sulfadiazine and penicillin are given for prophylaxis against infection and vitamin K as an antihemorrhagic agent. This method can be used in other conditions necessitating replacement, for example in carbon monoxide poisoning and burn toxemias."

COMMENT: This technique of replacement transfusion in the treatment of hemolytic disease of the newborn infant has been practiced now about two years. Its use is unquestionably an improvement over the former umbilical and other methods of transfusion, but should be done by one who is well equipped to do such work and certainly by no one who has not had a great deal of experience in transfusions as a whole, and if possible, preferably one who has had quite a good deal of experience in the treatment of erythroblastosis of the newborn.

V. A. CLINICAL PATHOLOGICAL CONFERENCE

White male 46 years old, a butcher, with about 3 months active service in the Army in 1918 during which time he had no admission to hospital, but stated he had a sore spot in back of neck since an alleged injury when a sack of potatoes fell on him. Since 1937 he had frontal headaches and had "lost pep."

About January 15, 1939, he noted a "kernel" in the left axilla following a head and chest cold with pain and swelling of left side of neck. He was admitted to a Veterans Administration Hospital on February 1, 1939, for these complaints. The examination then reported T.P.R. as normal; well developed and nourished; hard, tender, right supraclavicular node; one large nodule at anterior border of left axilla; negative ENT, skin, lungs, heart, abdomen, nervous system, bones and joints and genito-urinary system. Surgical consultation February 6, 1939, reported many enlarged discrete, tender, small, bilateral, cervical, inguinal and epitrochlear nodes. The tentative diagnosis was generalized tuberculous adenitis.

On March 8, 1939, a biopsy was performed on a tumor in the outer left breast area in the anterior, axillary-line. It was reported that the mass extended down to the pectoralis muscle and consisted of straggling, stringy-like fingers of apparent adipose tissue, which seemingly in its more compact portion, was undergoing some type of degenerative change. Histologic examination in the reticular tissues.

After 2½ months, the patient was transferred to second hospital where Hodgkin's disease was diagnosed. He received x-ray treatment, and in July 1939 he noted a suppurative nodule on his face which was opened, and numerous subcutaneous nodules were observed over entire body.

On September 24, 1939, he had a severe coughing spell, during which he had an epileptoid attack with frothing at the mouth and cyanosis. He had no recurrence of this attack for four weeks but then had two or three weekly of less severity than the first attack. His third and final hospitalization occurred December 8, 1939, for treatment of the multiple nodules over his body. Physical examination on admission reported him as afebrile, cachectic, (weight 110, normal 140) slight cyanosis,

anodontia, numerous subcutaneous nodules over body. Several on lateral chest wall were suppurating, and there were numerous nodules in cervical, axillary and inguinal lymph-node sites; blood pressure 80/60; heart negative; moist rales base of both lungs; genito-urinary system negative; suppurating tumor nodules on abdomen; one nodule on left aspect of face; right elbow tender and deformed, apparently tumor metastasis.

On December 9 at 1 p.m. contractions of right hand developed and he began to cry as if in fright. A hypodermic of morphine quieted him for a short time, and he then became stiffened, cyanotic, foamed at mouth, and then dropped into a stuporous sleep for about 10 minutes, rousing noisier than before. On December 14 he vomited coffee-ground material and had marked hematuria. On December 15 he became much weaker; coffee-ground vomiting was frequent and hematuria appeared again. On the next day he had marked emesis and hematuria and on December 18 he died.

An x-ray report December 9 reported irregular opacity inner third right base suggesting carcinoma; left lung was clear.

State Board of Health

Felix J. Underwood, M. D.

MISSISSIPPI'S HEALTH EDUCATION PROGRAM

by Cassie B. Smith
Associate Director

Recruitment of Public Health Educators for Local Health Departments

Recognizing the importance of leadership in adult and school health education for county programs an intensive recruiting program has been carried on this six months. Six outstanding Mississippians have been accepted by accredited schools of public health for entrance in the graduate schools in the fall term this year, pending fellowship awards from the General Education Board of New York.

Consultant Services to County Health Departments

The development of organized community adult and school health education programs has been concentrated in 8 counties where health educators are employed. The organization of community advisory health councils as a means of enlisting the participation of all the people in recognizing health needs and planning together to improve the general health of the county has been a primary objective. The health committee on the Delta Council has been very active in promoting advisory health councils. Three county organizations have been perfected in Delta counties and six in counties in other sections of the state. Representatives from the medical and dental societies, the health department, public schools, welfare de-

*Report to Mississippi State Board of Health covering activities for Jan.-June, 1949.

partments, voluntary health agencies, parent teacher associations, home demonstration clubs, farm agents' organizations and other interested citizens' groups and citizens compose these councils.

Organized health instruction in the public schools on vital health problems such as nutrition, venereal disease, cancer, tuberculosis and hookworm control; the correction of physical defects in school children, and the promotion of mental health has been developed through planning with teachers and furnishing them with films, bulletins, pamphlets and other effective teaching aids.

Provision was made for in-service training of health educators through a working conference on health instruction in schools and colleges; on adult education with organized community groups; and on the use of the press, radio, printed materials, exhibits and moving pictures in reaching people. In counties where health educators are not employed, health officers have been assisted with radio programs, the preparation of newssheets, annual reports, school health and community organizations.

Joint Planning With Divisions of the State Board of Health, Voluntary Health Agencies and Other State-Wide Organizations

The development of educational pamphlets on venereal disease, nutrition, dental health and maternal and child health have been co-operative projects of a pamphlet committee. The selection and production of films and

Tuberculosis Association with publicity, radio programs, exhibit planning and distribution of films.

Parent Teacher Associations have been assisted with their family life education programs on which health has received major emphasis through a speaker's bureau and through films and resource materials for study groups.

An intensive educational program on rural sanitation and personal and family health with organized farm groups has been carried on by a health educator jointly employed by the State Board of Health and Extension Service of State College.

Correspondence with college and high school students assigned health topics for research and theme writing and with adults requesting information for study groups has amounted to hundreds of letters during this period.

Interpretation as a part of the education and public relations programs has been given through frequent interviews with out-of-state health workers, the arrangement of field itineraries, visits to the University of Mississippi and Delta State Teachers College to address students, and to a number of teachers' meetings with other state organizations such as the welfare department. Special reports on the **organization and functions of the state and county health departments, unmet health needs, and accomplishments** have been assembled and edited for distribution.

Pamphlets Subject	Health Departments	Amount Distributed		
		Others	Out of State	Total
Maternal and Child Health	6,295	15	16	6,326
Sanitation	1,160	5	12	1,177
Mouth Health	2,217	50	32	2,299
Nutrition	3,435	151	13	3,599
School Health	1,565	146	23	1,734
County Health Work	1,170	23	22	1,215
Social Hygiene	141	86	4	231
Mental Health	162	16	2	180
Preventable Disease Control	4,442	93	72	4,607
Commercial	2,835	22	16	2,873
Total	23,422	607	210	24,241

filmstrips on recognized health problems is the responsibility of a representative film committee. Orientation in health education has been given all sanitarians and nurses during their training periods.

Assistance has been given the Cancer Society, the Infantile Paralysis Foundation, and the

Preparation and Distribution of Educational Materials

Exhibits

During this period, exhibits were prepared for the Mississippi Public Health Association, State Social Workers Conference and the Regional Hospital Association Meeting.

Visual Aid Equipment

Visual aid equipment is made available to personnel of the State Board of Health and to the County Health Department. During this period, approximately 101 loans were made.

Films	No. Showings	Attendance
Cancer	47	4,736
Diseases	82	11,207
First Aid and Safety	30	3,806
General Health and Physiology	160	18,515
Guidance and Mental Health	84	8,296
Infantile Paralysis	35	4,635
Malaria and DDT Spraying	11	1,130
Maternal and Child Care	39	1,894
Mouth Health	50	8,182
Nursing	9	1,016
Nutrition	147	17,909
Public Health	12	1,719
Sanitation	84	13,771
School Health	17	1,214
Tuberculosis	47	5,326
Venereal Disease	29	4,025
Comedies and Newsreels	40	5,417
Total	923	112,798

Radio Programs: Prepared written talks have been given every week over the radio on the following subjects:

- Nutrition (2)
- Polio (4)
- Health Education (1)
- Working with Other Professions (1)
- Arthritis (1)
- Occupational Guidance (1)
- Preventing Mental Illness (1)
- Chemical Engineering Serves Industry (1)
- School Health Services (1)
- Easter Seals (1)
- Cancer (8)
- Immunizations (1)

Twice each week the "Health Department Mailbag" is broadcast. Over this program questions that come in to the State Board of Health regarding personal and community health are answered by representatives of the State Board of Health. During this quarter questions have been answered on almost every public health subject—immunization, tuberculosis, food sanitation, diabetes, water supplies, pediculosis, scabies, measles, mumps, whooping cough, smallpox, venereal disease, nutrition, cancer, typhoid fever, typhus fever, undulant fever, milk sanitation, school health, diphtheria, and many questions regarding the services of the county health departments.

Newspapers: Releases were sent state-wide to all newspapers on:

- Heart Disease (1)
- Indigestion, Chronic (1)
- Mental Health (1)
- Health of Industrial Workers (1)
- Negro Health Weeks (1)
- Mouth Health (3)
- Diabetes (1)
- Good Eating Habits (1)
- Hookworm (1)
- Tuberculosis (1)

SPECIALS: Pan-American Health (1), Visitors, Special Events, etc. (8) Cancer (8).

Magazine Articles submitted were on:

- Polio (3)
- Cancer (6)
- DDT Operations in Counties (2)
- Diabetes (1)
- Insomnia (1)
- Heart Disease (2)
- Nutrition (1)
- Community Health Council, Value of (1)
- Health Education Opportunities (1)
- VD (2)
- Progress in Public Health (1)
- Rheumatic Fever (1)
- Early Immunizations (1)

If you lose your keys, and they are on the Blue Shield key chain sent to you recently, it is likely that they will be returned to you. The finder may simply drop them into any post office box and the Blue Shield office will identify them and send them on to you.

Woman's Auxiliary

OFFICERS

President	Mrs. Augustus Street Vicksburg
President-Elect	Mrs. W. H. Anderson Booneville
First Vice-President	Mrs. J. K. Avent Grenada
Second Vice-President	Mrs. T. A. Baines Jackson
Third Vice-President	Mrs. John B. Howell, Jr. Canton
Fourth Vice-President	Mrs. Stanley Hill Corinth
Recording Secretary	Mrs. P. E. Smith Hattiesburg
Treasurer	Mrs. J. D. Simmons Cleveland
Parliamentarian	Mrs. M. M. Snelling Gulfport
Historian	Mrs. H. F. Garrison, Sr. Jackson
Corresponding Secretary	Mrs. Thomas Dominic Vicksburg

COMMITTEE CHAIRMEN

Research and Romance of Medicine	Mrs. John B. Howell, Sr. Canton
Public Relations	Mrs. W. L. Waldron Jackson
Health Education	Mrs. Hugh Johnston Vicksburg
Preventorium	Mrs. Henry Boswell Sanatorium
Memorial	Mrs. V. B. Philpot Holly Springs
Doctor's Day	Mrs. Richard H. Clark Hattiesburg
Post War Planning	Mrs. H. C. Ricks Jackson
History and Archives	Mrs. H. F. Garrison, Sr. Jackson

COUNCILORS

First District	Mrs. John Williams Greenville
Second District	Mrs. L. L. McDougal, Jr. Tupelo
Third District	Mrs. A. E. Brown Columbus
Fourth District	Mrs. S. L. Bailey Kosciusko
Fifth District	Mrs. T. E. Wilson Jackson
Sixth District	Mrs. William Slaughter Meridian
Seventh District	Mrs. Frank Ramsey Laurel
Eighth District	Mrs. W. K. Stowers Natchez
Ninth District	Mrs. F. J. Harrell Biloxi
Legislation	Mrs. L. J. Clark Vicksburg

CONVENTION

The annual convention of the Woman's Auxiliary to the Mississippi Medical Association, held in Biloxi, May 9-11, in conjunction

with the Mississippi Medical Convention, was highlighted by the presence of many nationally outstanding personalities.

The first morning session was held Tuesday, May 10, on the Deck of the Buena Vista with Mrs. James K. Avent presiding.

Mrs. Werlien, president of Coast Counties Medical Auxiliary, gave the address of welcome and Mrs. W. H. Anderson of Booneville responded on behalf of visiting auxiliary members.

Mrs. Harvey Garrison, Sr., Jackson, gave highlights of the A.M.A. and the Southern conventions.

Mrs. Stanley Hill, Corinth, conducted a beautiful memorial service in honor of Mrs. Hugh Gamble, Greenville.

A past president of Southern Medical Auxiliary, Mrs. Richard Clark of Hattiesburg, introduced the speakers for the morning, Mrs. Joseph Kelso of Oklahoma City, charming president of Southern Medical Auxiliary, who presented the program with which Southern is asking state auxiliaries to cooperate.

Also on Tuesday, a beautiful auxiliary luncheon honoring Mrs. Luther Kice, Garden City, Long Island, was held at Gulf Hills Hotel in Ocean Springs. Mrs. Kice related in a most interesting manner her work as national president of the Woman's Auxiliary to the American Medical Association.

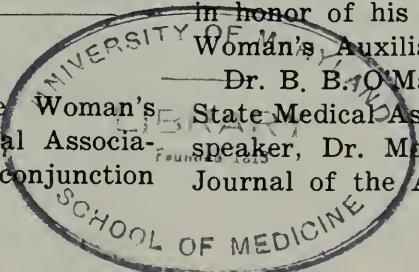
Tuesday afternoon the Coast Counties Medical Auxiliary gave a boat ride outing to convention visitors.

At the regular general business session of the Auxiliary Wednesday morning, a resolution was passed condemning the proposed national health insurance plan. Mrs. L. J. Clark of Vicksburg, legislative chairman, urged members to write their congressmen and senators, asking them to oppose such legislation.

After the election of new officers, the session adjourned for the Doctors' Day luncheon given by auxiliary members in honor of Mississippi doctors.

Mrs. J. K. Avent presided over the luncheon meeting and presented Mrs. Augustus Street, incoming president, with the beautiful president's pin. She also presented a small gold caduceus to Dr. Seale Harris, Birmingham, Ala., in honor of his wife who helped organize the Woman's Auxiliary in Mississippi.

Dr. B. B. O'Mara, incoming president of the State Medical Association, introduced the guest speaker, Dr. Morris Fishbein, editor of the Journal of the American Medical Association.



Dr. Fishbein urged that the general public be made aware that the quality of medical service in the United States is the highest in the world and that it cannot be improved simply by changing the method of payment as the present proposed national tax would do. He prophesied the danger of the introduction of bureaucratic control and the communistic direction such a move would bring about and urged a counter-acting policy of enlargement and improvement in hospital services, medical schools, medical research, and rural health education.

The list of new officers, released by Mrs. Street is as follows: president, Mrs. Augustus Street, Vicksburg; president-elect, Mrs. W. H. Anderson, Booneville; first vice-president, Mrs. J. K. Avent, Grenada; second vice-president, Mrs. T. A. Baines, Jackson; third vice-president, Mrs. John B. Howell, Jr., Canton; fourth vice-president, Mrs. Stanley Hill, Corinth; recording secretary, Mrs. P. E. Smith, Hattiesburg; treasurer, Mrs. J. D. Simmons, Cleveland; corresponding secretary, Mrs. Tom Dominic, Vicksburg; parliamentarian, Mrs. M. M. Snelling, Gulfport.

Chairman of standing committees are: History and Archives, Mrs. H. F. Garrison, Jackson; Research and Romance of Medicine, Mrs. John B. Howell, Canton; public relations, Mrs. W. L. Waldron, Jackson; legislation, Mrs. L. J. Clark, Vicksburg; Memorial, Mrs. V. B. Philpot, Tupelo; Doctor's Day, Mrs. Richard H. Clark, Hattiesburg; Preventorium, Mrs. Henry Boswell.

Councillors for the districts are: first, Mrs. John W. Williams, Greenville; second, Mrs. L. L. McDougal, Jr., Tupelo; third, Mrs. A. E. Brown, Columbus; fourth, Mrs. S. L. Bailey, Kosciusko; fifth, Mrs. T. E. Wilson, Jackson; sixth, Mrs. William Slaughter, Meridian; seventh, Mrs. Frank Ramsey, Laurel; eighth, Mrs. W. K. Stowers, Natchez; ninth, Mrs. Felix J. Harrell, Biloxi.

Delegates to the Auxiliary to the American Medical Convention in session in Atlantic City, N. J., are Mrs. James K. Avent, Grenada; Mrs. B. Z. Welch, Gulfport; Mrs. Harvey Garrison, Sr., Jackson; Mrs. V. B. Philpot, Holly Springs; and Mrs. Augustus Street, Vicksburg.

OUR NEW PRESIDENT



Mrs. Augustus Street

For years a leader in her local auxiliary and one of the most active members in the state organization, Mrs. Augustus Street of Vicksburg comes into the presidency at a most auspicious time. With a background of professional excellence, superlative attributes of charm and leadership, and vision for an active promotion of the work of the Auxiliary, she qualifies uniquely for the post. Her contacts over the state the past year have only focused interest and confidence in her role as a doctor's wife who can admirably uphold the magnitude of the undertaking. She exemplifies the ideal doctor's wife—a friendly, warm, outgoing person, possessing intelligence, deep understanding, a quiet sense of humor, and a never failing tactfulness, plus social grace and ease.

In these significant days of public relation, doctors' wives can build up a powerful lay good will; through our president we believe it will be a year of achievement vastly needed and appreciated by the profession.

Cough*

LOUIS H. CLERF, M.D.†
Philadelphia, Pa.

COUGH is a common symptom which often is not properly evaluated nor effectively treated. The physician usually is confronted with the questions: What is a cough? What are the causes of coughing? What should be done about it? While it may be distressing and purposeless it more often is a necessary and useful act so that suppression would be hazardous. Cough can be voluntarily produced but it commonly is a purely reflex response, and is often re-inforced by volitional effort.

Cough is dependent upon a local stimulus which originates nerve impulses that are transmitted by afferent nerves to the medulla. The reflex arc is completed through motor or efferent fibers innervating the respiratory and laryngeal muscles. The source of the impulses commonly originates in the air passages and stimulates sensory nerve endings of the pneumogastric and glossopharyngeal nerves. These impulses are carried to the respiratory centres in the medulla and excite and coordinate the spinal centers. There result increased activity of the inspiratory centre, stimulation of the adductor of the larynx, and increased excitation of the expiratory center. The act of coughing, therefore, can be divided into three phases, namely: inspiratory, compressive, and expiratory. During the inspiratory phase there is a deep, often quick inspiration. This is followed by closure of the glottis due to adduction of the vocal cords reinforced by the ventricular bands. This results in an increase in the intrapulmonary pressure, the compressive phase, immediately preceding expiration. During the expiratory phase the vocal cords and ventricular bands are quickly separated and air is forced out with the production of characteristic cough sounds.

The function or purpose of cough is the removal of mucus, inflammatory exudate and other material which may have originated in the air passages, or foreign bodies and other materials which may have been aspirated into the tracheobronchial tree.

Cough is a complex act and its effectiveness is dependent on a number of factors in addition to the expiratory blast. Bronchologists who have had opportunity to observe the interior of the air passages during cough have been able to add enormously to our knowledge concerning this mechanism. Important among these factors are bronchial movements which are dependent upon flexibility of the air passages and ability of bronchi to elongate and increase their diameter during inspiration and to shorten and decrease their diameter during expiration. During ordinary breathing the to and fro movement of the bronchial walls unquestionably contributes much towards loosening up and moving secretions attached to the walls and probably aids ciliary function by this means. The movement of the air current during quiet respiration very probably exerts no influence on the movement of secretion unless the quantity is sufficient almost completely to obstruct a bronchus. During forced respiration there is unusual widening, as well as elongation of the bronchi during inspiration and the expiratory blast is greatly in excess of that observed in quiet breathing. During the expiratory phase there is remarkable narrowing of the bronchi due to contraction of the smooth muscles in their walls as well as forcible compression of the peripheral portions of the lung through action of the diaphragm and the chest wall.

The narrowing of the bronchus always is more at the expense of the posterior or non-cartilaginous segment and is greatly accentuated in asthmatics and in cases of pulmonary emphysema. It is observed least of all in persons with pulmonary fibrosis or anthrasilicosis. This compressive action serves a useful purpose in forcing upward into larger bronchi secretions from the peripheral portion of the lungs. While respiration of a part of secretions occurs during inspiration a considerable quantity is evacuated if there are successive expiratory efforts.

The role played by bronchial movements during respiration is extremely important in the removal of secretions from the air passages and probably is not fully appreciated. Deep inspiration with forced expiration are

*Read at the meeting of the Mid-South Post-graduate Medical Assembly, Memphis, Tennessee, February 7 to 10, 1949.

†Department of Laryngology and Broncho-Esophagology, the Jefferson Hospital, Philadelphia, Pa.

effective since the excursus of motion of the bronchial walls is greater and this tends to move bronchial secretions and ultimately aids in their expulsion. The degree of mobility is practically negligible when breathing is quiet and shallow irrespective of its rate. This is observed in narcosis, acute pleurisy and injuries to the chest.

Another mechanism which is important in the elimination of secretions from the air passages is ciliary function. Ciliated epithelium is present in all portions of the airway except the terminal bronchioles. Upon normal conditions ciliary motion and bronchial movements contribute in moving secretions from the smaller to the larger bronchi. Cilia often are hampered by inflammatory changes and during acute infections their activity may be greatly impaired. The presence of excessive or tenacious secretions clogs ciliary activity so that it becomes practically functionless. It is more effective in the presence of thin than in thick secretion and this should be a consideration in therapy, to increase the effectiveness of cough.

A very important physiological fact, namely, the establishment of a condition of tolerance, must be borne in mind in a consideration of cough. Tolerance may lessen or entirely obliterate temporarily the reflex excitability of the cough excitation areas. As examples may be cited the tolerance established for the O'Dwyer intubation tube when introduced into the larynx and the absence of cough following the initial paroxysm of coughing, gagging and choking following aspiration of a foreign body into the larynx or tracheobronchial tree. This has been corroborated by all bronchologists, for it is a common experience that even in the absence of local anesthesia, cough will cease following introduction of a bronchoscope into the trachea or a bronchus provided the tube is allowed to remain in contact with the walls for a matter of seconds without touching new mucosal areas and producing reflex excitation. Whether this is due to exhaustion of the nerve endings in the mucous membrane is a question. A condition of tolerance is commonly observed in patients with bronchiectasis who have enormous quantities of secretion. They are able to carry on without coughing for hours and when cough is initiated voluntarily or by change of posture they may evacuate three or four ounces of pus and again relapse into a state of tolerance until the bronchi again fill. A similar condition has

been noted in toxic conditions, anoxia, status asthmaticus, postoperative pulmonary atelectasis and drowned lung. In children one also occasionally observes a case of almost complete absence of cough reflex.

The older clinicians attached much importance to the character of the cough and this gave rise to many descriptive terms. A brassy or metallic cough was commonly associated with aneurysm of the arch of the aorta. This is due to tracheal narrowing and may also be observed in compression due to other causes and to cicatricial stenosis of the trachea, or of a bronchus. The croupy or laryngeal cough is commonly associated with conditions which produce subglottic swelling. Paroxysmal cough as the name implies occurs in fits or paroxysms and is associated with certain specific respiratory infections but may occur in individuals who have an excessive amount of secretion. Cough often is referred to as dry or productive. This classification is not dependent on the patient's ability or lack of ability to expectorate after coughing, for expectoration is an accomplishment that comes from practicing. Young children and many women invariably swallow secretions after they are coughed up into the pharynx. A dry cough therefore does not necessarily mean that there is no secretion although an irritative cough is observed in bronchial carcinoma, often is unassociated with secretions and is truly non-productive. Not infrequently, however, individuals who have secretion in the peripheral portions of the bronchial tree are unable to cough it up as the cough is inadequate.

Since cough is a symptom one must ascertain the cause in order to treat it intelligently. Suppression of cough by administration of narcotics to inhibit the cough reflex may be beneficial at times but it is not adequate or appropriate treatment unless one is aware of the cause of the cough and that suppression is desirable.

What are the causes of cough? In the common respiratory diseases cough is a frequent symptom and there should be no difficulty in determining its cause. This applies notably to pulmonary tuberculosis, pulmonary abscess or other pulmonary diseases that can be demonstrated by routine roentgen study and physical examination. It is important however, to recognize the importance of cough as a symptom, in order that appropriate investigation may be instituted. Too often patients with carcinoma of a bronchus have appeared at the Clinic

with a history of having been under medical treatment for six or more months and no diagnosis has been made. Often medication has been given to control a persistent cough which if recognized as due to bronchial irritation might have indicated the need for further bronchopulmonary investigation.

The almost universal habit of smoking, notably cigarettes, has misled many persons, both patients and physicians to believe that a cough was merely a "cigarette cough" and therefore could be ignored. Cough is common among excessive smokers particularly those who smoke cigarettes. It is usually a morning cough but may be present throughout the day. It is commonly paroxysmal and is productive of tenacious secretion. There often is associated retching and gagging particularly following the first paroxysm in the morning. It is important therefore to distinguish between the cough due to certain habits and the cough due to disease of the tracheobronchial tree. Excessive smoking and chronic alcoholism produce local congestive changes in the pharynx, larynx and tracheobronchial tree. These, together with systemic effects, undoubtedly are responsible for the chronic inflammatory changes of the mucosa. The increased production of thick tenacious mucus which is difficult to dislodge gives rise not only to cough but to frequent clearing of the throat.

Certain occupations requiring exposure to dust and fumes exert an unfavorable influence on mucous membranes of the respiratory tract. These produce chronic congestive changes, and an increase in secretion and cough. In a study of patients complaining of cough it is therefore important to make inquiry into their occupation and habits.

There may be extrapulmonary causes of cough. We all are familiar with the so-called "ear cough" or "reflex aural cough" which can be provoked at will by irritating the external auditory canal. Cough may be a symptom of impacted cerumen. It is important therefore to examine the ears when investigating a case where complaint is made of cough alone. Cough may occur in eczema, local inflammation and foreign bodies in the external auditory canal.

Cough also is observed in diseases of the nose and nasal accessory sinuses. Here too it may be unassociated with any other symptom. It is important therefore, in unexplained cough, to investigate the nose for evidences of

large turbinates, polyps, points of contact between the nasal septum and turbinates and vasomotor disturbances. The latter would probably be part of an allergic condition.

Nasal and pharyngeal obstruction is a common cause of cough, particularly in children, and usually is worse at night occurring after several hours of sleep. Not infrequently one observes patients with nasal disease who have been treated as cases of tuberculosis or bronchiectasis although positive findings to support this diagnosis never have been secured. In these the cough is persistent, is not controlled by the commonly employed sedatives, is associated with little sputum and usually is worse at night. Examination may reveal unsuspected disease of the sinuses of obstruction to the nasopharynx by adenoids, necessitating mouth breathing, particularly when asleep. Any condition causing nasal obstruction and mouth breathing is productive of a chronic laryngotracheitis, if continued for a sufficiently long period of time. Cough is a common symptom in this group.

Cough may be associated with the taking of food or fluid, notably thin liquids, as water. This may occur in paralysis of the larynx, either motor or sensory, esophageal stenosis, pharyngeal diverticulum, esophageal fistula communicating with the trachea or a bronchus or presence of laryngeal disease which interferes with the protective function of the larynx. It is important to distinguish between cause and effect when considering inflammatory conditions of the larynx as the cause of cough.

Posture at times exerts a very definite influence on the occurrence of cough. Patients with pharyngeal diverticulum often cough when assuming a prone posture. This is due to overflow of secretions or food particles into the airway. This also is observed in those who have high esophageal stenotic lesions with retention of secretions or bits of food proximal to the stenosis. In these, cough is troublesome during sleep and may occur in severe paroxysms. Severe productive cough occurring when one assumes a prone position or a change in posture should suggest either pulmonary abscess, bronchiectasis or empyema with bronchopleural fistula. This is due to a change in the fluid level of secretions which, making contact with new areas of mucosa, stimulate the cough reflex.

A pedunculated tumor, foreign body or exudate in the tracheobronchial tree which on change of posture alters its position and makes

contact with new areas of mucosa will cause cough.

Allergy always must be considered as a cause of cough. It may produce generalized engorgement of the mucosa of the nose producing obstruction or similar localized changes suggesting angioneurotic edema may occur in the pharynx, larynx or tracheobronchial tree. As a rule these are unassociated with sputum.

Cough of functional origin does occur but one must be exceedingly careful to exclude all possible organic causes before arriving at this diagnosis.

Since the potential causes of cough are innumerable how should one proceed in an investigation of this symptom? A careful history of the onset and character of the cough, the presence and appearance of sputum, the time of occurrence and associated symptoms are important. In addition one should make inquiry into the occupation and habits of the patient.

A study of the chest should be made to rule out pulmonary and mediastinal diseases. No reference has been made to cardiac disease as a cause of cough. Obviously this is an important cause and the cardiovascular system should be investigated. The more common causes of cough should be excluded first. One should then proceed with an examination of the ears, nose, mouth, throat, laryngopharynx, larynx and neck. This can be done by any physician who has a reasonable knowledge of the upper air and food passages. The inveterate smoker should be encouraged to discontinue smoking for a time and the worker in dust or fumes should make every effort to minimize exposure in the absence of any definite localizing clinical or roentgen evidence of disease. In the absence of any demonstrable cause of cough on the basis of adequate physical examination and roentgen study the question arises whether one should do a bronchoscopy, whether iodized oil should be instilled for lung mapping to determine if there is present bronchiectasis or whether the patient should be given a mild cough sedative and observed for a time. In the presence of unexplained radiographic shadows or localized physical signs bronchoscopy should be done particularly if the patient is an adult male. Cough without or with slight sputum is a common early symptom of bronchogenic carcinoma.

Bronchography is indicated if there is any suspicion of increased bronchopulmonary markings suggesting bronchiectasis. In the presence of a history of allergy appropriate

tests should be made.

One may on occasions consider the instillation into the tracheobronchial tree of a small quantity of medicated oil to allay irritation. This is particularly useful in chronic laryngotracheitis and should be employed if the history and physical findings suggest such a diagnosis. The patient may be contented with the effects of a cough sedative or intralaryngeal instillations. The physician, however, should be interested in determining the cause of the cough as well as securing relief of this symptom.

Cough is necessary to rid the tracheobronchial tree of excessive secretions as in pulmonary abscess or bronchiectasis and in these narcotics should be used sparingly if at all. In carcinoma cough commonly is purposeless, particularly before bronchial obstruction develops, and in these it is imperative that the symptom be recognized as an early manifestation of bronchial irritation and appropriate steps be taken to complete the diagnosis. In the postoperative case the cough "reflex" should not be suppressed. Every effort must be made to maintain adequate drainage of the tracheobronchial tree to prevent bronchial obstruction with secretions and the occurrence of postoperative pulmonary atelectasis. A similar regimen should be employed following injuries to the chest.

Much has been written concerning the use of cough mixture in chronic cough. If cough is purposeless cough sedatives may be indicated. These should be used for brief periods however, for not only do they suppress the cough reflex but they also tend to diminish normal bronchial secretion. When cough is inadequate due either to the presence of thick tenacious secretions which adhere to bronchial mucosa and cannot be dislodged by bronchial movement or ciliary activity so-called stimulating expectorants are recommended. If these increased the fluid content of bronchial secretion so that it could be more readily coughed up there would be justification for their employment. Inhalations of carbon dioxide and oxygen increase the quantity of sputum and have been highly recommended.

In conclusion, the physician must regard cough as a symptom and while relief should be afforded the patient while the cause of cough is investigated, merely suppressing cough with a narcotic often will prove harmful. A more comprehensive knowledge of the mechanism of cough and its function is necessary to manage it successfully.

The Ragweed Problem in the Southwest*

RALPH BOWEN, M.D.
Houston, Texas

OUR ragweed season in Houston, Texas, arrives between September 15 and 20 or, about one month later than in the northern half of the United States. This botanical difference is most important because ragweed patients not aware of this variation will frequently take vacations northward to Chicago or New York and experience hay fever about August 10. After this holiday they return to the Gulf Coast area and have a second period of discomfort. Vacations would be better planned in mid-September. This phenomenon is due to the difference in sunlight hours. The more sun—the later the period of pollination. So in planning vacations for patients these facts must be stressed. However, California might invite them at any time as a haven.

Newspaper Publicity During Ragweed Time

During the last week in August of this year our newspapers (associated press) carried two glowing accounts of the new wonder drugs for the hay fever patients. One stated "Trimeton relieved 90 per cent of hay fever victims"—also added, "Trimeton relieved 83 per cent of all allergic conditions." The other article claimed "Thephorin as being effective in 90 per cent in the treatment of 142 cases of hay fever and other allergic conditions.

Both of these articles were trail blazed by outstanding men in the field of allergy—however, these claims were certainly not the experience of 35 allergists I contacted. It is this kind of publicity which gives the public false hope; places other men doing allergy in a bad light since claims can't be duplicated. In the end it doesn't help the specialty of allergy. Is all of this because of enthusiasm or because some see Associated Press publicity at ragweed time?

Of the 35 allergists contacted it was interesting to learn that the vast majority still considered Pyribenzamine as the one of first choice. They prescribed Pyribenzamine during the day and Benadryl at night since it aided many to sleep better. I believe we will all agree

that every patient be individualized relative to the antihistamine drugs. At best they are only an adjunct. In severe hay fever cases; or when the pollen count is really high the value of these drugs still leaves much to be desired.

In the *Science News Letter* for September 25, 1948, there appeared an article stating that "Hay fever may be induced by unhappiness." If this be true pray tell how unhappiness seems to be so universal for 10 per cent of the population in Chicago on August 10 and in the South around September 15—I believe most of the unhappiness is in the little ragweed granule.

Statistics Relative to Ragweed Cases

Often we see the statement that 60 per cent had good results, and that 30 per cent had fair results. It would be interesting to know what is meant by the words "good" and "fair". We also have to appreciate the time of day, or day, when the patient is questioned. For example, if the quizzing is done at 8 a.m., the answer may be "miserable" or "terrible"—if questioned at 2 p.m., the answer may be "much better". It is also important how the question is asked.

Our patients may be so geographically located, that, botanical exposure to pollen is maximal or minimal. Then there are patients who wish to give "their doctor" a good report, and may even minimize their discomfort. Others may complain long and loud to justify an economic obligation.

"Time" As a Factor in Statistics

The importance of the "Time Factor" in statistics was first called to my attention by Dr. B. G. Efron of New Orleans. For example—any allergist who has practiced many years will be able to show you a greater per cent of success per 100 patients than a new worker in the field of allergy, the reason being that the doctor who has practiced 20 years is like "the old hen, who has kept her chicks of successful cases," while his failures have annually discontinued, thus increasing statistically a higher success ration than factually exists

per 100 unselected patients. Each year the older physician pyramids his good results but he forgets his pyramid of failures.

The Nurse and the Ragweed Patient

It must be appreciated by the nurse that many of these patients are really ill, tired because of loss of sleep, and many may make unpleasant remarks. It is important, therefore, for the nurse always to be gracious and appreciative of the seasonal change in some "Ragweed Personalities."

Asthmatic Children and Coma Globulin

During the winter months we all see a certain group of asthmatic children who in spite of vitamins, vaccine therapy, food restrictions, and environmental control—will have violent asthmatic attacks precipitated by respiratory infection.

Last winter I took 15 of these challenging asthmatic children and treated them alternately with Gamma Globulin, making eight treated cases and seven as controls. I gave subcutaneously 2 to 4 cc. of Gamma Globulin (Cutter's) to these children every six weeks. Once each week I also gave .05 cc. of Gamma

Globulin intradermally to the treated group. The group receiving the Gamma Globulin experienced very little bronchitis or asthma, while the control group had a trying time. May I also add, that last winter was a severe one for respiratory problems.

I am in no way trying to convey the impression that this is the answer to such cases, but hope that others will follow a similar approach to confirm or reject this study so that better immunity to infection may be established. If the companies will be more selective in preparing the Gamma fraction from certain types of cases perhaps our results may still be improved.

Gamma Globulin:

Cutter's: Gamma Globulin contains 160 mg. of Gamma fraction per 1 cc. This is from venous blood and pooled from 1500 to 1800 cases.

Sharpe and Dohme: Gamma Globulin contains 75 mg. of Gamma Globulin fraction per 1 cc. This may be (either/or) a venous and placental fraction.

Lederle's: Gamma Globulin contains 160 mg. of Gamma Globulin fraction per 1 cc. This is prepared from the placental blood only.

It is expected that Blue Cross-Blue Shield non-group membership will be offered in Nebraska within the next three months. Individual enrollment will be available to persons who cannot meet the regular group requirements. Self-employed persons, and those who work where there are fewer than five will be eligible to enroll for non-group membership.

Subarachnoid Hemorrhage—Diagnosis and Management*

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THE syndrome of spontaneous subarachnoid hemorrhage is characterized by a sudden onset with severe headache followed by coma; the diagnosis is confirmed by the presence of blood in the spinal fluid. It is a recurring and highly fatal disorder. This, in brief, is the clinical picture as presented in most textbooks of medicine. There are, however, several features of this syndrome which warrant greater consideration than has heretofore been directed to them. Subarachnoid hemorrhage must be clearly differentiated from the general term of "cerebral hemorrhage" since it represents a specific clinical entity having its own characteristic etiology, symptomatology and specific measures of treatment. Whereas cerebral hemorrhage is a symptom of generalized vascular disease, subarachnoid hemorrhage is due usually to localized intracranial vascular pathology in the form of a congenital anomaly which is frequently amenable to control by surgery. The prevalence of this condition is much greater than is generally realized, due partly to failure to recognize the condition as a specific entity. It characteristically affects healthy young adults, and the ultimate mortality is reported as ranging from 50 to 90 per cent, depending on the accuracy and duration of the follow-up study. If the first episode of hemorrhage is not fatal, repeated recurrence with ever increasing neurological sequelae is the rule. Since the patient is usually a healthy and otherwise intact individual, it is imperative that early and sometimes radical measures be instituted to avert the usual fatal outcome.

Etiology and Pathology

In recent years many pathological reports have been made in autopsy studies to indicate that the underlying pathology is usually a small aneurysm. These lesions are considered to be developmental in origin, resulting from imperfect resorption of embryonic vessels in

the process of condensation of segmental arteries which ultimately constitute the Circle of Willis (circulus arteriosus). Defects in the muscular layer at the bifurcation of cerebral arteries have also been reported as a causative factor in the development of aneurysms. The aneurysm, being an abnormal vessel, is usually susceptible to arteriosclerosis and necrosis of its wall. This leads to rupture at a much earlier period in life than that due to the generalized arteriosclerosis of old age. Other conditions such as syphilis, rheumatic fever and septicemia are usually mentioned as possible causes but are of little significance in this regard. Angiomas and vascular neoplasms of the brain are of greater importance in causation of hemorrhage.

Symptoms

Prodromal symptoms may occur for a variable period before hemorrhage. Headache, usually described as migrainous in character, is the most common complaint. Visual disturbances, tinnitus, vertigo, and convulsions occur less frequently. In the younger patients, particularly, there are often no premonitory symptoms whatever.

The symptoms of subarachnoid hemorrhage occur suddenly, often after physical exertion and consist of excruciating headache, frontal and suboccipital, followed rapidly by coma. The milder cases may not lose consciousness. Signs of meningeal irritation including nuchal rigidity, fever, photophobia and leucocytosis appear within twenty-four hours, due to blood in the spinal fluid, and may lead to diagnostic error in favor of acute meningitis. Convulsions, cranial nerve palsies and hemiplegia are not infrequent in severe cases. The course may be rapidly fatal or there may be gradual improvement. Clinical improvement is slow and is marked by prolonged and severe headache, mental confusion and ataxia. There is at all times the possibility of recurrence of the hemorrhage, and subsequent episodes are progressively more severe and disabling.

Diagnosis

The characteristic history will allow one to arrive at a correct diagnosis in most cases.

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†Read before the Central Medical Society, April 5, 1949, Jackson, Miss.

This should always be confirmed by lumbar puncture with the disclosure of blood in the spinal fluid. This should be the first step in diagnosis and should be immediately followed by a minute search for the location of the site of the hemorrhage. Careful and repeated neurological examination will often yield information of lateralizing and localizing value. Fortunately, in this regard, most aneurysms lie at the base of the brain in proximity to the cranial nerves, and development of a cranial nerve paralysis such as oculomotor palsy enables one to make an exact localizing diagnosis. The development of pyramidal tract signs, (hemiplegia, etc.) might indicate a localized intracerebral extension of bleeding amenable to surgical evacuation of hematoma.

In the event no localizing signs appear, cerebral arteriography should be carried out. This is a procedure which is easily performed by percutaneous injection of 35 per cent aqueous solution of diodrast into the common carotid artery in the neck. After injection is carried out on one side the x-ray film is quickly developed and observed for evidence of vascular pathology. If none is evident, the patient's head is rotated and the procedure is repeated on the opposite side. This is tolerated well under local anesthesia, but if the patient is apprehensive sodium pentothal is administered. Even in the case of a clinically localized intracranial aneurysm, arteriography is a valuable prelude to surgical attack upon the lesion.

Treatment

In the acute phase of subarachnoid hemorrhage reduction of increased intracranial pressure by careful and repeated spinal drain-

age is the most effective means of controlling headache, restlessness, nausea and vomiting. Absolute rest and quiet with avoidance of any straining or excitement is imperative to reduce the likelihood of continued bleeding. A bleeding diathesis should always be excluded by appropriate blood studies.

At the first appearance of sufficiently definite localizing signs, ligation of the carotid artery in the neck with or without preliminary diodrast injection should be carried out. In our experience sufficient time has not elapsed to warrant any definite statement, but it is our impression that early ligation of the carotid artery in the neck will, in an appreciable number of cases, obviate the need for the much more hazardous intracranial attack on the aneurysm. In those cases, however, where bleeding continues or where neurological signs progress unfavorably a direct surgical approach to the aneurysm is imperative. Often a subdural clot or an intracerebral hematoma will be disclosed at operation. The aneurysm itself is usually controlled by proximal and distal ligation of the artery by tantalum clips.

Summary

1. Subarachnoid hemorrhage is a syndrome which warrants distinction from the general term of cerebral hemorrhage.
2. Subarachnoid hemorrhage is symptomatic of underlying intracranial vascular pathology, usually a small aneurysm of the Circle of Willis.
3. Cerebral arteriography is of considerable diagnostic and localizing value.
4. Ruptured intracranial aneurysm should be controlled by ligation whenever possible.

We are well aware of the penalties of delay in diagnosing tuberculosis. Undiscovered, the disease progresses, often to the point of hopeless intractability; unchecked, it spreads freely; and unrecognized, it breeds new cases. If we are to succeed in controlling tuberculosis, this is exactly what must not continue to occur. Francis J. Weber, M.D., Pub. Health Rep., Oct. 1, 1948.

Postabortal Welchii Infection*

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GAS bacillus infection in postabortal and postpartal patients is a rare complication. Our own interest was focused upon this entity by the occurrence of a fatal case of postabortal gas bacillus infection in the practice of the senior author.

Historical

The first authentic report of gas bacillus infection is reputed to have been published by Leduc in 1597 who, describing a difficult delivery state, "Immediately after the delivery of the child and placenta, a violet-colored flame with a sulphurous odor escaped from the vulva; this flame shot out some distance from the external genitals of the patient and its heat could be distinctly felt by the hands of the persons who held her"¹.

In 1892 Welch and Nuttall reported the isolation of the *Bacillus Aerogenes Capsulatus*. The following year, 1893, Graham, Stewart, and Baldwin described, "The *Bacillus Aerogenes Capsulatus* Case" where there was no doubt of the causative organism as bacteriological examination showed *Clostridium Welchii* in great abundance. Four years later in 1897 Lidenthal, who was interested in puerperal infections, reported the isolation of the gas bacillus in two out of six puerperal patients, none of whom gave clinical evidence of gas bacillus infection².

Young and Rhea, in 1909, added two cases of puerperal gas gangrene infections to the literature, and it is of interest to note that they were the first to report the deep color of the skin so often seen in these cases¹. Frankel in 1913 first reported methemoglobin in the blood and urine of a case of gas bacillus infection⁷. W. Lehman, in 1923, was the first to publish a case where the disease was both diagnosed and cured⁷.

A. M. Hill reviewed the literature in 1936 and was able to find only 114 cases³. M. H. Poppel reported 175 cases in a review of the literature in 1941. Seventy-five per cent of

these cases were associated with abortions⁴. Numerous cases have been added to the literature since 1941, especially in the reports from the Latin American countries, however, it is not common in our country, and can be considered as one of the rarer types of complications. With modern aseptic technique, its occurrence is largely limited to those cases that are infected prior to seeking proper medical attention.

Bacillus Welchii was discovered independently in three countries:

1. England, 1892, Welch and Nuttall, and named it *Bacillus Aerogenes Capsulatus*.
2. Germany, 1893, Frankel, and called it *B. phlegmonis emphysematosae*.
3. France, 1897, Veillon and Zuber, and named theirs *B. perfringens*.

Bacteriology

Clostridia, the genus of bacillus *Welchii*, are all spore-bearing anaerobes, which live largely in the soil. Sewage water, and foods, especially those coming from the soil, are commonly contaminated. Positive cultures have been secured from the skin, mouth, bile, urine, and intestines, especially around the anus.

When cultures are taken from infected cases more than one of the anaerobes of the *Clostridia* are found, however, *Clostridium Welchii* usually predominates. It is believed that the contaminate organisms play their part by devitalizing tissue, and allowing the toxin producers to multiply.

B. Welchii is identified as a short, plump, gram positive, non-motile, capsulated bacillus, occurring singularly or in pairs. Chains may or may not be found. The best growth is obtained under strict anaerobic conditions, however, unlike *B. tetani*, strict anaerobiosis is not necessary. *B. Welchii* is a spore-bearing, and an active fomenter that will ferment all the common sugars with the production of gas. In vivo the gas in the tissues comes from the fermentation of muscle sugar and the characteristic odor from the formation of butyric acid⁷.

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Mode of Infection

All prenatal and postpartal patients should be adequately prepared before examination since the perineal hair and feces are commonly contaminated with spores of the bacillus. It was once believed that relaxation of the perineum played an important part in the direct contamination of the vaginal tract with feces, however, Sadusk and Manahan⁹ found 31.6 per cent of their series of positive patients to be primiparas. Relaxation, therefore, may be of some importance but certainly it is not a major factor.

Vaginal and uterine packs can be a major factor if they should be left in too long. Rendle-Short¹ reported a case of gas bacillus infection where a uterine pack, by accident, was left in the uterus.

The occurrence of *B. Welchii* in the vaginal tract of pregnant women has been known since 1897 when Lidenthal demonstrated the organism in two out of six normal puerperal patients². Bysshe, in 1938, in a series of 547 routine cases of pregnant and puerperal patients found positive cultures of *B. Welchii* in 4.5 per cent. Twenty per cent of these showed puerperal morbidity and clinical evidence of at least an endometritis. There was evidence of traumatized and devitalized tissue in all of the infected cases². Salm, in 1944, reported a series of 843 puerperal patients with varying degrees of morbidity in 6 per cent of whom positive *B. Welchii* cultures were obtained. Today most of the authors have concluded that the presence of *B. Welchii* in the birth canal is of little importance unless associated with traumatized or devitalized tissue.

Criminal abortions can be classified as an etiological factor, for these are frequently performed under septic conditions, and by individuals not familiar with the dangers of gas bacillus infections.

Diagnosis

While making a partial review of the literature the varicous signs and symptoms listed below were noted:

Temperature is usually only slightly elevated and may be normal, respiration is increased, pulse rate is increased and usually of low tension in the early stages. The blood pressure ranges from normal to slightly below normal, and a rapidly developing toxic jaundice which is most marked on the face and body may occur. The patient complains of progres-

sive excruciating uterine pain, otherwise unexplained. Sudden collapse without reason is sometimes noted, and a few patients have chills. There may be palpable crepitus over the uterus. Emphysema of skin was reported in 16.7 per cent of cases¹² and generalized emphysema was found in 4.7 per cent of cases¹². Foul vaginal discharge that may contain gas bubbles, and may have a sweetish odor is reported, while lower abdominal discoloration was noted in one case. The skin is frequently cold and clammy, and cyanosis is frequent; the vagina may be black or green in color. There is usually only slight bleeding. The patient commonly develops peritonitis with general sepsis. Progressive anuria is frequent, and it may or may not have been preceded by hematuria. At times one may find methemaglobin in blood and urine. The urine is usually acid, may be burgundy or port wine in color, albumin being inconsistently found. Frequently positive cultures of *Welchii* can be secured from urine sediment, and there is rarely any sugar, hematoporphyrin, hyaline or blood casts. The red blood count shows increasing secondary anemia, and the hemoglobin may drop from 70 per cent to 30 per cent in six hours. White blood counts range from 20,000,000 per cu. mm. to 125,000, and blood cultures are variable. Cultures may be positive in mild cases and negative in severe cases. The organism being an obligated anaerobe, it will not thrive in the blood stream and is usually found only preceding death. Nausea, vomiting and diarrhea are variable. Patients are characteristically mentally alert to the last.

Differential Diagnosis

Progressing jaundice may cause one to think of an acute or chronic biliary disease, however, the jaundice of gas gangrene deepens rapidly and is of a shorter duration. This type is only seen when a calculus is plugging the cystic duct and then the general picture is entirely different. A severe malaria infection may cause jaundice and can be ruled out with repeated blood smears for the malaria parasite. Different types of streptococci infection can be ruled out by blood smears and cultures⁵.

Cyanosis of sulfa drug poisoning must be eliminated if the patient is taking one of the sulfonamides.

Probably the most rapid method of making a diagnosis is the identification of *B. Welchii* in the vaginal discharge.

Course of the Disease

In the thirteen deaths, of the thirty cases reported by Hill³, death occurred on the average of eight days after the last interference of suspected date of infection. Hill also noted that the puerperal patients died sooner than the postabortal patients.

Previously we listed the many different signs and symptoms that a patient with *B. Welchii* infection may present. From this one can surmise that patients show wide variations in the clinical manifestations of the disease. There are six important factors that vary in each patient and in turn alter the intensity of the disease. These are:

Variability in the toxin-producing capacity of the different strains of *Clostridium Welchii*, stage of pregnancy, degree and site of invasion, adequacy of the blood supply to the infected tissue, resistance of the patient, and time therapy instituted.

In the acute case the picture is dramatic. The patient has acute abdominal pain, jaundice, a foul discharge, possible vomiting and diarrhea, a rapid pulse, cold clammy skin, oliguria progressing to anuria, and the vaginal discharge may actually contain gas bubbles. This patient has a rapidly adverse clinical course and dies either from a fulminating gas infection or anuria.

As previously listed in our signs and symptoms and in the majority of reported cases, as well as our own, the patient even though critically ill and moribund, will remain acutely conscious until the last. Too frequently the correct diagnosis is made at autopsy.

Treatment

As in all diseases, prophylactic treatment is of prime importance, and more so in patients where the fetal heart sound is not audible, a toxemic patient, and in the exhausted patient where resistance is lowered. In these cases, especially, one should strive for less traumatic deliveries, that is, less damage to the soft parts of the mother.

Vulva hairs should be shaved in all cases and the vulva carefully disinfected before making an examination. All potentially contaminated cases should receive antigas gangrene serum along with either one of the sulfa

drugs and penicillin or both. Roentgen therapy may be of prophylactic value.

General treatment should consist of strict isolation, an accurate record of intake and output, repeated whole blood transfusions, and infusions. The diet should be salt free and both diet and fluid intake should be greater than the minimum requirements. Concentrated vitamin preparations may be of some general value. All patients should be digitalized early and continued so until symptom free. This aids in diuresis, helps prevent circulatory collapse and tends to slow the rapid pulse.

Anti-toxin serum and penicillin are used as specific treatment of the disease though unfortunately they are not as specific as we would desire, as the mortality of *B. Welchii* infections is still high. Penicillin is advocated in large doses, because of the poor blood supply of the damaged tissue⁶.

Serum is of value as demonstrated by Adey¹¹ when he injected twenty-four guinea pigs with equal amounts of *B. Welchii*. Twelve of these were untreated and all died. Within three hours of injection, the other twelve were given 70 International Units of concentrated *Welchii* anti-toxin intramuscularly. None of these died.

In the human the suggested intramuscular dose is 40,000 to 60,000 International Units of *Clostridium* Antitoxin every twelve hours for three to four days¹. This same dosage may be given intravenously if desired in 600 cc. of normal saline or 10 per cent glucose and normal saline. This too should be repeated daily for three to four days or longer. A more severe case may require 200,000 to 600,000 International Units daily by combined routes. Therapy should be continued until clinical indications have been absent for two to three days.

One of the sulfonamides can be given, however, in cases with oliguria it may become dangerous and certainly the blood sulfa level should be checked daily, as well as the urine for crystals.

Acidosis is frequent as manifested by extreme thirst, dyspnea, and a lowered blood CO₂ combining power. The *B. Welchii* during its growth creates an acid medium for its own toxin is most stable well on the acid side, therefore it is advisable to administer some form of alkali.

Abdominal distention may become dangerous as well as disagreeable and should be treated

with intubation using either the Wangenstein or Miller-Abbott tube with continued suction as indicated. Prostigmine, abdominal heat, and rectal tube may be of some benefit.

Oxygen is indicated if respiration becomes increased or cyanosis develops.

It is now thought that the uterus should be emptied if it contains any of the products of pregnancy. Ideally we try to empty the uterus quickly and with as little trauma as possible using induction, dilation and curettage, or hysterectomy. One's decision comes from examination of the cervix and clinical judgment. If the patient's condition permits, a hysterectomy should be done when there is evidence of uterine musculature involvement. This can be demonstrated by palpating crepitation or x-ray evidence of small air bubbles in the walls of the uterus. Hill³ advocates hysterectomy when there is progressive hemolysis or increasing general toxemia even though a physometra is not demonstrated. Probably a general anesthetic should be used in place of spinal as immediately postoperative the patient should be placed in Fowler's position.

The renal failure that so many of these cases develop must be vigorously combated with any of the usual methods, including:

1. Hypertonic intravenous fluids.
2. Salt free diet.
3. Diuretics.
4. Diathermy to kidneys.
5. Sympathetic nerve block.
6. Calcium gluconate (20 cc. of 10 per cent solution i. v.) or
7. Decapsulation of the kidneys.

Roentgen therapy has been advocated and some of the authors go so far as to state that it is a specific if started early. A dosage of

100 r. per area twice daily for three to five days is the suggested dose⁴.

Prognosis

Prognosis is good when the infection is limited to fetus or the endometrium as the majority of these patients in the past have lived¹. As the infection leaves the boundary of the fetus or the endometrium the mortality rate rises rapidly and most of the patients that develop the classical symptoms will die¹. Popperman and Silverman gave the disease of 63 per cent mortality⁴. Rendle-Short found that one-third of the patients die 48 hours and 50 per cent die 172 hours from the onset of the infection¹. A positive blood culture offers a poor prognosis and a review of the literature shows all patients with metastatic gas gangrene to have died.

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One of the most significant recent advances of the improved tuberculosis case-finding procedure is the program to give a routine chest film to all hospital admissions. As people enter hospitals for reasons of illness, a higher incidence of tuberculosis than that found in the general population may be expected. The U. S. Public Health Service reports this to be twice as much. Approximately 10 per cent of the general population are annually admitted to public hospitals. This large, easily accessible group offers an ideal opportunity for the discovery of unsuspected tuberculosis. S. A. Holling, M.D., Canad. J. Pub. Health, Jan. 1949.

The Rh Baby*

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THIS condition presents a picture of excessive destruction of the red blood cells, detected in the blood smear by the presence of too many nucleated red blood cells, and too many reticulocytes, thus causing a severe anemia, jaundice of varying degrees, edema, pallor and anasarca. The Rh baby occurs just before delivery, during delivery or just after delivery within the first twenty-four hours. Some of the other terms given this condition, are erythroblastosis foetalis probably the most common one, hemolytic anemia of the newborn, congenital anemia of the newborn, foetal hydrops, familial icterus, gravis, etc.

It was not until 1941 that Levine and his co-workers discovered that the Rh positive babies born of Rh negative mothers had the disease, although it had been existing all these years. The cells of the Rh positive baby must get into the circulation of the Rh negative mother causing her blood to form Rh antibodies. These Rh antibodies return to the foetus and if in high enough concentration destroy the red blood cells of the baby producing this condition of erythroblastosis, by excessive hemolysis. A good point to remember here is that not all humans are capable of producing anti-bodies. This anti-body production of the mother may be found out during pregnancy by periodic testing of the mother's blood for Rh anti-body production, particularly in the last trimester. If there is no increase in the anti-body titer the chances of an Rh baby are slim, but still may happen. If the anti-body titer goes up then be ready for an Rh baby at delivery.

The Rh factor is present in 85 per cent of the white population, the other 15 per cent do not have it. In the colored population 95 per cent have the Rh factor and 5 per cent do not have it. The Rh factor is a hereditary trait, not related to other blood groups. There are 8 types Rh, Rh¹, Rh₂, Rh₀, Rh., H², A, and B. In 15 per cent of marriages the wife is Rh negative. Of all deliveries there is one Rh baby in every two hundred. If the father

is homozygous or predominant there will be no Rh babies. If the father is heterozygous or recessive the chances are 50-50 that an Rh baby will be delivered. The reason for this is there is one dominant and one recessive gene present. The only way you can tell whether a father is predominant or recessive is if there are other children in the family especially two or more. You test the children and if they are all positive two or more, then the father is predominant. If the tests on the children show one or more of them negative along with the positive then the father is recessive or heterozygous. The Rh baby is more likely to occur after the first pregnancy due to the build up process of the antibodies.

The clinical findings are severe hemolytic anemia, jaundice, edema, generalized anasarca, splenic enlargement, and liver enlargement.

The commoner types of jaundice with date of onset:

- icterus neonatorum—2-10 days
- Rh baby—first twenty-four hours
- obstructive—birth
- congenital malformations—varies
- syphilis—third day
- catarrhal—fifth year
- infectious (Weils)—any age
- septic—any age.

The most important point is to know that you have the possibility of an Rh baby coming up, in order that all preparations may be made for the mother and the baby.

The possibility of an Rh baby should be considered and worked out if you have an Rh negative mother and an Rh positive father. The mother's obstetrical history may be bad, the Rh antibody titer increases in the last trimester. There may be a family incidence in the history, negative and positive children in the family.

After delivery as soon as the baby has been properly and thoroughly resuscitated examine the baby closely for yellow vernix, yellow cord, and this may be for only a short distance up the cord. Examine the skin around the cord for jaundice. The baby may look anemic, have jaundice, anasarca, enlarged spleen and or liver. If the placenta has been delivered it may be larger than normal.

*Read before the fifty-first semi-annual meeting of the Delta Medical Society, Greenville, Miss., April 13, 1949.

A complete study of the baby's blood should be made immediately for the Rh factor, anemia, nucleated red blood cells, reticulocytes, typing, and cross matching. Always remember that an Rh baby may look and act perfectly normal at birth, and in a few hours set in with a violent erythroblastosis.

A peculiar thing about this disease is that in twins one may have it and the other one will not.

In the laboratory exam, blood examinations should be made every four to six hours to denote the severity and progress of the disease and treatment. This is your only guide as to how you are making out. You will find severe anemia, a white count of 15,000 to 30,000, nucleated red blood cells in excess of the normal which is 200 to 2,000. The red cells are larger than normal with little variation in shape. The color index is greater than 1. The red blood cells are immature, platelets reduced, causing a hemorrhagic tendency along with the jaundice, icterus index is high, urine contains bile, and stools clay colored.

The treatment is transfusions and general supportive measures of the newborn. The transfusions are of Rh negative blood and should be given as soon after delivery as the diagnosis is made. Rh positive blood may be used if you have to. The mother's or the father's blood is never used. Some use multiple transfusions, as indicated by the blood count every four to six hours, some use the bleeding type of drawing the blood from the baby until the baby is exsanguinated or the hemoglobin drops to 20-30 per cent and then building it back with the transfusion until the hemoglobin is 60 per cent or better. This will give 90 to 95 per cent exchange in blood.

Others use the replacement transfusion of drawing 20 to 50 cc. of blood from the baby and replacing it with an equal amount of the blood to be transfused. This is done until 350 cc. have been withdrawn and 400 cc. have been replaced. The blood volume is figured at 300 or 350 cc., and 400 cc. of transfused blood put back, thus providing an extra 50 cc. This will give you a 90 to 95 per cent replacement of blood.

The blood transfusions usually have to be continued for a week or until the blood count gets to a satisfactory level and stays there. It is usually two to three months before the baby's blood count is normal.

Pointers learned from the disease to be carried out are that Rh negative females should get Rh negative blood when transfused. Rh negative females should get pooled plasma or Rh negative tested plasma. The Rh negative transfused with Rh positive blood will form Rh antibodies and destroy the next transfusion in a like manner to erythroblastosis, and give reaction, jaundice and loss of benefits of the transfusion.

In Rh babies, liver, reticulogen, calcium, glucose, iron, etc., are of no help. Splenectomy does not help.

In an emergency blood may be given intravenously, by bone marrow, and intraperitoneally. The baby must be active to get much absorption from the intra-peritoneal route.

The prognosis is fair. Sixty-six per cent will get well, and as more knowledge is gained, surely this figure will be increased. Some of these babies that survive will be allergic, mentally deficient, and have retarded growth and development.

For prevention of this disease it has been suggested that the Rh test be required for marriage, birth control, and that Rh negative females get only Rh negative blood transfusions.

Summary

1. The Rh baby is a severely anemic Rh positive baby with jaundice coming on in the first twenty-four hours after birth, edema, pallor, anasarca, yellow vernix, yellow cord, enlarged spleen and liver, bile in urine, clay colored stools, high icterus index, color index greater than one, nucleated red blood cells in large numbers.

2. The mechanics of the disease being the entrance of Rh positive foetal blood cells into the circulation of the Rh negative mother causing an Rh antibody production which returns to the foetal circulation destroying the foetal red blood cells by hemolysis.

3. Complete Rh history and examination for the expectant mother.

4. Thorough physical examination, and laboratory work up for the Rh baby at delivery, and through first forty-eight hours.

5. The treatment is general supportive measures for the newborn, with blood transfusions of Rh negative blood in proper amounts, often enough, and long enough to overcome the anemia.

6. That Rh negative females always receive Rh negative blood.

7. That the prognosis will get better with increasing knowledge of the disease. Some of these babies will be allergic, mentally de-

ficient, with retarded growth and development.

8. Every effort should be made to prevent this disease from happening, however if it does early recognition and proper treatment can alleviate it.

The Indications for Irradiation of Nasopharyngeal Lymphoid Tissue*

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GREAT strides have been made in the field of otology in the past ten years, particularly in the conservation of hearing. This progress can be attributed largely to Crowe¹ and his co-workers who, in 1939, announced the splendid work of the Otological Research Laboratory of the Johns Hopkins Hospital on the prevention and treatment of deafness in children. While other able otologists² have made valuable contributions, the original group³ has continued to dominate this field.

In brief, their studies led them to the conclusion that early conduction deafness was most often due to inadequate ventilation of the middle ear; that the causative pathology was usually lymphoid hypertrophy, not only in the nasopharynx but also hypertrophy of lymphoid follicles lying beneath the mucosa of the Eustachian tubes; and that, if free ventilation of the middle ear could be obtained before irreversible changes had taken place, normal hearing would be restored.

It is difficult, if not impossible, surgically to remove all of the lymphoid tissue in the nasopharynx (adenoids) and recurrence of that tissue is frequent; furthermore, it is impossible to remove surgically lymphoid follicles from the Eustachian tube; therefore, radiation was considered. Deep therapy Roentgen rays were first tried but since the rays had to pass through the skin and other tissues, it was necessary to use different angles and exact centering, to apply adequate irradiation to the Eustachian canals and nasopharynx without damaging the skin and overlying tissues. For these reasons, radium was preferred and Crowe and Burnam⁴ devised a nasopharyn-

geal radon applicator. Literally remarkable results were obtained.

Unfortunately, at that time, such an applicator could be obtained only in a city large enough to have a radon plant, and necessarily such work was limited to large clinics and hospitals. In 1940, at the author's insistence, the Radium Emanation Corporation made up an applicator⁵, patterned after the original one. This was available to all otologists, presumably the first applicator to be used in office practice.

During the war the most common cause of disability due to flying was aerotitis, or the inability to equalize the air pressure in the middle ear with the barometric pressure outside during rapid changes in altitude. The loss of man hours reached such proportions that in May, 1944, the air surgeon appointed a commissioner of ten otologists to study the problem. After due consideration of the pathogenesis and the available methods of treatments the commission recommended irradiation of the nasopharynx as a control measure⁶.

As this article infers, irradiation of the nasopharynx was first successfully employed in cases of early conduction deafness in children; later successfully employed in controlling aerotitis in adults. It was only natural that this method of treatment would be extended to all patients suffering with early conduction deafness, the Eustachian type of tinnitus, those suffering with a sense of fullness or pressure in the middle ear and those cases in which lymphoid hypertrophy in the nasopharynx was a focus of infection. Not only were good results obtained in those fields but many patients reported fewer colds, relief from asthma and drying up of "running ears". A review of the results obtained is interesting.

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Impairment of Hearing

Irradiation of the nasopharynx is indicated only in cases of conductive deafness before irreversible changes take place. Polvogt⁷ reported satisfactory improvement in 85 per cent of a selected group of 282 private patients of all ages. Bordley⁸ reported "appreciable useful increase in hearing acuity" in 45 per cent of a children's series; and stated "not over 25 per cent of adults show such improvement."

In the author's⁹ series of 56 carefully studied adult cases with follow-ups, 52 complained of impairment of hearing. These cases ranged in age from 21 to 73 years; their impairment of hearing had existed from two weeks to nineteen years and each was given one to eleven irradiation treatments. Not a single severe reaction was encountered. Twenty of the fifty-two cases showed "appreciable, useful increase of hearing acuity" an average of 38.5 per cent improved.

In reviewing these cases, ten had noted impairment of hearing for six months or less. Of these ten, eight (80 per cent) showed marked improvement; two cases did not show appreciable improvement. While this is a small series of cases, it is obvious that better results can be obtained in early cases.

Aerotitis

The complete report of the Army Air Force⁵ showed that 6,881 men were given 14,045 treatments without a single severe reaction. Overseas, only patients with aerotitis were treated; but in the United States a large number with hyperplastic lymphoid tissue in the nasopharynx were treated on a prophylactic basis. In the completely followed series, 74 per cent of cases of aerotitis were reported improved; in the group given prophylactic irradiation the incidence of aerotitis was only half that noted in an untreated control group.

Tinnitus

Polvogt⁷ reported that in a group of 835 private patients, 97 patients' only complaint was tinnitus. He reported 3 per cent relieved and stated "3 per cent is a very small percentage, but it is a group of most grateful patients; and it is worth trying, even if you get only 3 per cent cure."

The author⁹ reported a survey of 136 adult patients treated by irradiation of the nasopharynx. Only 56 replied to a questionnaire,

49 of whom complained of tinnitus (of all types). Fourteen per cent reported 100 per cent relief, and 49 per cent reported lesser degrees of relief, a total of 63 per cent reporting some degree of improvement.

In studying these cases, six of the seven who reported 100 per cent relief had suffered with tinnitus one year or less. Cross checking of the twenty cases who had suffered with tinnitus one year or less, six reported 100 per cent relief, five reported 50 to 90 per cent relief, one reported 15 per cent, five reported improvement but did not estimate the percentage and three reported no change. To summarize, 85 per cent reported varying degrees of relief, 15 per cent reported no change, and not one reported the tinnitus worse. It is therefore evident that early treatment offers the best prognosis.

Fullness and Pressure in the Middle Ear

In a series of nine patients with this complaint, Polvogt⁷ reported 90 per cent good results. In the author's⁹ series of 56 patients, 41 complained of this symptom; 12 per cent reported 100 per cent relief and an additional 58 per cent reported varying degrees of improvement; a total of 70 per cent improved in a selected series.

Focus of Infection

Polvogt⁷ reported a group of 122 patients referred with varying complaints, such as mild arthritic symptoms, elevation of temperature, etc., in which the only focus of infection found was a varying amount of adenoid tissue. Ninety per cent of these patients became asymptomatic and remained so over a period of two years.

Asthma

In 1941, Ward¹⁰ noted that among children who were given irradiation for lymphoid hypertrophy in the nasopharynx were several asthmatics, who reported decreased severity and frequency of asthmatic attacks. This resulted in a joint research study by the Department of Otolaryngology, Allergy and Pediatrics of the Johns Hopkins Hospital¹⁰. Thirty-four children were selected for careful and complete study. Each was given from two to six irradiation treatments. Fifteen obtained complete relief, five were greatly improved and three were moderately improved—a total of 68 per cent reporting satisfactory results.

Polvogt⁷ reported treating "several children eight to ten years old who have had asthma every night of their lives, and after one radon treatment the asthma stopped that night. All asthmatic patients have had three or more treatments. Some have remained entirely free from attacks, in others, the attacks have been very mild and a greater interval between attacks. A few have not been helped. The treatment is also true in adults. All the patients, both children and adults, have had varying amounts of adenoid tissue. Many of them have had tonsillectomy and adenoidectomy. Why the radiation helps, we do not know, but the problem is now in the process of research under my direction."

Frequency of Colds

Quite surprisingly, many patients who were treated by irradiation of the nasopharynx volunteered the information that they had fewer colds. In Polvogt's⁷ group of 128 patients, 40 per cent showed improvement. In the author's⁹ group of 56 patients, 50 per cent reported fewer colds.

Chronic Purulent Otitis Media

One of the most difficult types of cases to control is the chronic "running ear" of years duration, frequently requiring radical mastoid surgery. Three cases of this type have been treated by the author. Each gave a history of a discharging ear over a period of years, refractory to all treatment; each had undergone tonsillectomy and adenoidectomy some years previously but each had lymphoid hypertrophy in the nasopharynx. Dry ears were obtained in two cases. A dry ear was obtained in the third case but there since has been a recurrence and this patient is still under treatment. However, good results in two out of three cases of this type may be considered literally remarkable.

Conclusion

It has been the purpose of this paper to call to your attention the beneficial effect of irradiation of the nasopharynx. The author wishes to emphasize the value of early treat-

ment; good results cannot be obtained after irreversible changes have taken place.

At the same time it must be remembered that this method of therapy is not a cure-all; that good results are obtained **only** in properly selected cases; and that promiscuous irradiation will have unpleasant sequelae.

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Report of a Case of Acute Hydramnios*

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THE term "hydramnios" or "polyhydramnios" is used to designate a pregnancy in which there is an excessive quantity of liquor amnii. A recognizable degree of hydramnios is stated by Rehberger² to occur in about one case out of every 300 pregnancies. The amount of amniotic fluid in the normal case, according to Williams¹, varies from 750 to 1800 cc. Minor degrees of hydramnios (i. e. 2000 to 3000 cc.) are seen fairly often, but marked degrees are quite uncommon.

In the great majority of cases the increase of fluid is gradual, allowing the maternal circulation to become accommodated remarkably well to the increased pressure on the surrounding organs. When, as occurs much less frequently, the fluid accumulates in a comparatively short time, signs and symptoms of acute respiratory and cardiac insufficiency may develop rapidly (dyspnea, cyanosis, and edema).

The etiology and pathology of many cases of hydramnios are not clear. They are often associated with an abnormality or deformity of the fetus, particularly hemicephalus and spinabifida, occasionally clubfoot, ectopio of the bladder, and kidney tumor. Some cases are attributed to a lesion obstructing circulation in the cord (thrombosis of the umbilical vein; torsion of the cord) or changes in the fetus such as hepatic or cardiac abnormalities. A few cases are said to be due to disease of the amniotic membrane itself.

Toxemias of pregnancy often occur in association with hydramnios. Whether one condition predisposes to the other, or both result from a single common cause, is not known.

Problems in differential diagnosis in a suspected case of hydramnios involve multiple pregnancy and, occasionally, in the slowly developing case, ovarian cyst or ascites might give cause for confusion. In the acute case with rapid development of fluid, primary cardiac and circulatory disorders might logically be suspected. In cases which develop

slowly, the patient (and physician) may entertain thoughts of multiple pregnancy, the abdomen being disproportionately large for the estimated months of gestation. It should be remembered that it is frequently difficult to obtain a satisfactory x-ray shadow of the fetal skeleton in hydramnios, and that several views may be necessary.

The case to be reported in this paper is unusual in respect to the large amount of amniotic fluid present, and the suddenness of onset of symptoms. It is typical, however, in being associated with toxemia and fetal monstrosity.

Case Report

The patient, a 38-year-old colored woman, was admitted to the Witte Hospital on the fourteenth of June in an acutely ill condition. Her abdomen was enormously distended, she was dyspneic and vomiting. Urine examination was reported by her family physician (Dr. Roy Spaulding, Arcola) as showing a strongly positive albumin test; T-99 3/5; P-116; R-24. Her abdomen was uniformly tense and firm and measured 51½" in circumference. No fetal parts could be palpated, it being occasionally possible to tip with the finger a ballotable mass (assumed to be the head) in the vicinity of the umbilicus. No fetal heart tones or movements were discerned.

The patient stated that she had menstruated last in November, 1947, making the gestation six and one half or seven months. The pregnancy had been uneventful up to about two weeks before admission, when her abdomen started swelling, becoming larger each day, so that in a few days following the onset, she suffered from headaches, nausea and vomiting, and increasing shortness of breath. She gave a history of having had twelve previous pregnancies, one of which terminated by miscarriage, three children dying in infancy of various causes, and eight children were living and well. She had always been heavy, her usual weight being around 176 pounds, but to her knowledge, had never had any hyper-

*Read before the fiftieth semi-annual session of the Delta Medical Society, Greenwood, Miss., Oct. 13, 1948.

tension, heart or kidney trouble, nor any symptoms of toxemia or convulsions with the previous confinements.

It was necessary to give oxygen for dyspnea, glucose for vomiting and dehydration, demerol for sedation, and penicillin injections were begun as a prophylactic measure in anticipation of possible surgical interference.

The day following admission, her general condition was somewhat improved, vomiting had ceased and the dyspnea had ameliorated sufficiently to permit the discontinuance of oxygen. An A.-P. x-ray view of the abdomen showed only a homogeneous opacity. A lateral view (using lateral lumbar spine technique and fifteen seconds exposure) revealed a single fetal shadow in a head-down position, the skull appearing to be disproportionately large in respect to the rest of the skeleton.

At this time it was decided to attempt to induce labor by the usual medical measures of castor oil, enema, and small doses of pituitrin, with the intention of doing some destructive procedure on the head in the event it could not be delivered. Mild uterine contractions occurred in about two hours time, so that by 2:30 p.m., on the fifteenth (the day following admission) sufficient dilation of the cervix had occurred to permit rupture of the membranes with a hemostatic forcep. Ten and one half ($10\frac{1}{2}$) quarts of amniotic fluid (approximately $2\frac{1}{2}$ gallons) were collected, it being allowed to drain off gradually over about twenty-five minutes' time. The patient was immediately more comfortable, her respiration being nearly normal in character, pulse 100, and blood pressure 150/90. An x-ray taken at this time showed that the fetus had changed position to breech. Following this, she was given demerol and returned to bed. Spontaneous labor ensued about fifteen

hours later, the body of the fetus being expelled in breech position, the head remaining arrested in the pelvis. During the process of attempting to deliver the head by the manual method, the scalp and meninges perforated spontaneously, the hydrocephalic fluid draining off, thus permitting the head to be pulled out without any further difficulty. Following this, the patient recovered uneventfully, so that on the seventeenth of June her blood pressure had dropped to 138/90, temperature and pulse normal; the urine showed only a trace of albumin; the blood S. T. S. was reported as doubtful (unfortunately, the patient had left the hospital before this report was received, so that a second specimen was not obtained). She was dismissed on the nineteenth in good condition.

The fetus was stillborn, the healthy appearance of the skin indicating it had died during labor. The body and extremities were well-formed, the arms and legs being shorter than normal. No other defects were noted with exception of the head, which was disproportionately large. The parietal, frontal, and occipital bones were unusually large, flat, and thin, flaring outward to form a box-like compartment without a top. The brain appeared grossly to consist of the usual component parts, but was flabby and small, the upper portion of the brain consisting of only a thin layer of tissue. There was a collection of clotted blood about the size of a walnut (or 15 cc.) at the base of the brain and under the meninges. Complete autopsy was not performed.

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The tuberculosis mortality rate for 1947 was the lowest ever recorded in the United States. An even further reduction in the tuberculosis death rate in 1948 is indicated by the estimated rate of 30.3, based on a 10 per cent sample of death certificates. Sara A. Lewis, Pub. Health Rep., April 1, 1949.

Management of Meningitis in the Light of Present Day Therapy*

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MENINGITIS may be defined as any inflammatory process involving the meninges, and acute meningitis usually involves only the arachnoid and pia mater.

For the sake of discussion we may classify the acute meningitides, as follows:

Primary: meningococci, pneumococci, streptococci, influenzal.

Secondary: tuberculous, pneumococci, pyogenic, miscellaneous.

In this classification the primary types refer to those cases of meningitis which occur spontaneously with no evidence of preceding infection. This is most frequently true in meningococci and influenzal; pneumococci and streptococci may be either primary or secondary. Tuberculous meningitis is invariably secondary to a primary focus elsewhere in the body. It is conceivable that any infectious process may extend to involve the meninges, and, indeed, there are recorded instances of diphtheric, typhoid, gonorrheal, actinomycotic meningitis and others that I shall not attempt to enumerate.

I shall attempt to limit this discussion to the forms more frequently seen in pediatric practice.

The symptoms vary greatly, and in the early stages of the disease, when diagnosis is most important, one must be alert to the symptoms that may point to a diagnosis. High fever associated with delirium, vomiting, convulsions, and retraction of the head and neck, if not fully accounted for by some other condition, warrants examination of the spinal fluid. Headache, severe and continuous, is the most frequent complaint in patients old enough to talk. Delirium is common early in the disease in older patients. In infants the vacant expression with glassy eyes is very suggestive and especially is this so if the patient complains on being handled. The full fontanelle should not be overlooked. After the second day the diagnosis is usually obvious with stupor, retracted head, expression of pain, crossed eyes with dilated pupils, slow pulse and positive Kernig's sign. Finally, and with-

out hesitation, if meningitis is suspected, spinal puncture should be done. This is a simple and safe operation and may be done with little pain to the patient. It may be done in one's office without hesitation. Practically speaking, there are no failures. Not only may one determine the presence of meningitis, but also may the offending organism be determined by a spinal puncture. This is very important from an immediately practical standpoint. If one knows the type of meningitis with which he is dealing, he knows whether isolation is necessary. It may be safely stated that it is necessary to isolate only the meningococci infections. The other forms are certainly no more contagious than the disease to which they may be secondary.

Since the advent of the sulfonamides, penicillin, and, more recently, streptomycin, probably no disease has received more attention from these new drugs than has the different forms of meningitis. An extensive literature has accumulated, and, generally speaking, the reports have been confined to observation on small groups of patients or in isolated cases. There are, therefore, many different conclusions, especially with reference to the optimum dosage, length of treatment, and period of isolation in the contagious forms.

Rosenberg and Arling¹ reported sixty-five cases of meningococci meningitis treated with penicillin intrathecally and intramuscularly with only one death. They also reported three patients with hemolytic streptococcus meningitis, two patients with streptococcus viridans meningitis, and one patient with pneumococcus meningitis, all of whom recovered without sequelae. They employed penicillin, 10,000 units intrathecally once daily and up to a total of 250,000 units intramuscularly.

Davies², of Boston Children's Hospital, in a comprehensive discussion of meningitis, stresses the importance of early diagnosis and supportive treatment. He also suggests giving small doses of sulfadiazine daily over a period of several days to persons exposed to meningococci meningitis as a preventive. The specific drugs used in the various forms of meningitis were sulfadiazine, penicillin, and type specific antiserum (rabbit) in the case

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of influenzal meningitis. It may be noted that streptomycin is not mentioned in this report (1945).

Paine and Finland³, in a recent article in the Medical Clinics of North America, state that meningitis caused by a gram-negative bacillus responds least favorably to the sulfonamides and penicillin, and that streptomycin has proved to be the most effective agent now available in the treatment of these infections including tuberculous meningitis. The most frequent meningitis caused by a gram-negative bacillus is the influenzal. Paine and Finland recommend streptomycin, sulfadiazine, and specific *Hemophilus influenzae* Type B rabbit antiserum in that order in the treatment of influenzal meningitis.

As early as 1944 the Council on Pharmacy and Chemistry⁴ of the American Medical Association suggested that the end of serum therapy for meningococcic meningitis was in sight.

Therefore, in the light of the foregoing reports, and of many others in the same vein, one is justified in stating that the treatment of the various forms of meningitis has been completely revolutionized in the past five or six years. Although statistical evidence is not at hand, I have a feeling that throughout this area meningitis is not occurring as frequently as it did fifteen years ago. With the sulfonamide drugs and penicillin, the respiratory infections are cleared up before a secondary meningitis develops. Tuberculosis is being controlled and, therefore, tuberculous meningitis is less frequent.

I shall now attempt to outline a procedure for the management of the forms of meningitis more frequently seen. A patient with meningitis will seek medical aid early in the disease because he is acutely and painfully ill from the onset. Any patient suspected of having meningitis should have the benefit of spinal fluid examination. Spinal puncture may be done safely in one's office. Local anesthetic should be employed even in the smallest infant, one per cent metacaine is quite satisfactory. Penicillin solution in the concentration of 5,000 units to 1 cc. of normal saline solution should be at hand. It should be noted at this point that the spinal canal of an infant is relatively nearer the surface than that of an older child or an adult. Most failures in the procedure are due to the fact that the operator pushes the needle through the canal into the venous plexus on the pos-

terior aspect of the body of the vertebra if, indeed, the needle is not driven into the body of the vertebra itself. The result is venous blood and not spinal fluid. It should also be noted that the lumbar sac is relatively nearer the head in an infant than in an adult. Therefore, one may be more successful if the upper lumbar spaces are used. If for any reason the lumbar spaces are not available, cisternal puncture may be done. Again, caution should be used in not going too deep because here vital structures may be encountered. With the needle properly in place and the specimen of fluid obtained, it should be determined either by gross appearance or microscopic examination whether meningitis is present. If so 2 cc. (10,000 units) of the penicillin solution should be injected in the sub-arachnoid space. The offending organism should now be identified and in the great majority of cases this may be done from a smear of centrifuged sediment. If one is dealing with a meningococcic infection, the patient should be isolated and further intrathecal medication is usually unnecessary. If the patient is unconscious, sodium sulfadiazine 5 per cent in normal saline solution intravenously or .5 per cent subcutaneously at the rate one half grain per pound of body weight as the initial dose should be given. This may be repeated every eight hours until the patient regains consciousness. It may then be given by mouth at the rate of $1\frac{1}{2}$ grains per pound per twenty-four hours. Penicillin in suitable doses should be given every three hours intramuscularly.

If the smear shows pneumococcus, the above schedule may be followed except that penicillin in 10,000 unit doses should be given intrathecally every twenty-four hours until the spinal fluid shows no organisms and the cell count is definitely decreased. This plan of treatment should be followed for staphylococcic and streptococcic meningitis. It is generally felt that specific serums are not only unnecessary but may add an additional hazard due to sensitivity and serum sickness. The question may be raised as to the advisability of employing both the sulfonamides and penicillin when one or the other would in all probability be sufficient. As a rule the patient will tolerate both drugs quite well and the chances of recovery are enhanced. Should the patient be intolerant of either drug, the other should be relied upon. If meningitis is due to *Hemophilus influenzae*, the treatment must be prompt and vigorous. Streptomycin

should be given intrathecally .05 to 1. gm every twenty-four hours, 1. gm per kilogram of body weight intramuscularly every twenty-four hours in divided doses. At the same time sulfadiazine should be given by mouth at the rate of .2 gms per kilogram of body weight daily in divided doses. If the response is not prompt, Alexander's specific rabbit serum should be used. This is given in an initial dose of 50 mg. to 100 mg. intramuscularly or intravenously. Subsequent doses are dependent on the condition of the patient.

There have appeared in the literature a few reports of patients with tuberculous meningitis recovering after prolonged treatment with streptomycin. Certainly, the course of the disease has been altered and the lives of the patients prolonged in a number of reported cases. It is in all probability too early to evaluate properly the final outcome. The treatment employed has been streptomycin both intramuscularly and intrathecally over long periods of time.

In a summary of treatment of suppurative meningitis, Rhoads⁵ gives the following suggestions with references to the various agents now available:

1. Penicillin in meningococcic, pneumococcic, streptococcus viridans, streptococcic hemolyticus, and staphylococcic meningitis.
2. Streptomycin in Hemophilus influenzae meningitis.
3. Sulfonamide, sulfadiazine preferably, or sulfamerazine, for Hemophilus influenzae, meningococcic, pneumococcic, streptococ-

cus viridans, streptococcus hemolyticus, and staphylococcus meningitis, and meningitis of undetermined etiology. On sulfonamide therapy adequate alkalinity should be maintained.

4. Biologic therapy should be considered in pneumococcic, Hemophilus influenzae, meningococcic and hemolytic streptococcus meningitis, if the response to penicillin, streptomycin, and sulfonamides is not satisfactory.

In summary it may be stated that since the advent of the sulfonamide drugs, penicillin, and streptomycin

1. There has been a marked decrease in the occurrence of the different forms of meningitis.
2. The treatment is technically less difficult.
3. The period of illness is shortened.
4. Complications are less frequent.
5. The mortality has been very much reduced.

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There are many features in a good tuberculosis control program, but all of them are based on the fundamental principle that tuberculosis is contagious, and that the patient who has the germs in his sputum, or who shows x-ray evidence of progressive disease of the lungs such that the sputum is likely to become positive, must be isolated from his family and from the community in a tuberculosis hospital or sanatorium where strict bed-rest, good diet, and special surgical procedures in selected cases, can be provided to stop the advance of the disease and render him non-infective. Miriam E. Brailey, M.D., Baltimore Health News, Nov., 1948.

Amebiasis*

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IN presenting this paper, it is my purpose to discuss some personal observations in the diagnosis and treatment of amebiasis rather than to take up the disease in its entirety. Time does not permit that.

The pathology of amebiasis has been described as follows by Bercovitz¹: "Cysts of *Endamoeba histolytica*, ingested with contaminated food or drink, pass through the stomach into the small intestine where they excyst, forming motile trophozoites. These forms invade the mucosa of the bowel, usually in the region of the cecum or the sigmoid, but other areas of the large bowel may also be infected.

"The amoebae multiply in the mucosa of the bowel in the area of invasion. Small flask-shaped ulcerations develop which extend deep into the tissues with only a relatively small opening to the mucosal surface of the bowel.

"When amoebae migrate from this location, the resultant complications will depend on where the amoebae lodge and multiply. They may penetrate the small venules and via the venous circulation reach the liver. Here, at the location of each amoebae, there may be a microscopic area of cytolysis which may eventually coalesce with other such tiny areas for the formation of an abscess.

"In this way there occurs hepatitis followed by an abscess which may be bacteriologically sterile or secondarily infected.

"Following the formation of an abscess in the liver there may be extension through the dome of the liver to involve the diaphragm and perforation of the diaphragm to involve the pleura and lung on the right side. The symptomatology depends largely on whether the abscess is sterile or secondarily infected.

"Perforation of the bowel may occur due to penetration of the amoebae through the layers of the bowel wall to the serosal surface and cause signs of peritoneal irritation but, also, the perforation may be complete. Perforation of the bowel may occur at any point along the course of the colon but most frequently in the area of the cecum, hepatic or splenic flexures and sigmoid colon."

D'Antoni² has classified amebiasis as follows:

"1. Asymptomatic Amebiasis.

Patient not cognizant of symptoms, with lesions not confined to specific areas.

2. Symptomatic Amebiasis.

A. Asyndromic.

Mild toxemia and vague gastro-intestinal irritation, with lesions usually not confined to specific areas.

B. Syndromic.

Symptoms simulating chronic appendicitis, peptic ulcer, chronic cholecystitis, with lesions usually confined to cecal area.

C. Dysentery (acute or chronic)

Symptoms of dysentery, with lesions throughout colon, especially rectum and sigmoid.

D. Hepatitis and liver abscess.

Fever, pain and tenderness in liver area, with lesions in liver tissue.

E. Involvement of other organs.

Abscess of lung, brain, kidney, amebiasis cutis, etc."

"The incidence of *Endamoeba histolytica* infections in the general population of the United States is stated by Craig and Faust³ to be at least 5 to 10 per cent, while in some institutions and occupationally selected groups, surveys have shown an incidence of from 53 to 55.5 per cent. Faust estimated the incidence for the Western Hemisphere as being 20 per cent."

The epidemiology of amebiasis is that of any filth borne disease. Open toilets, flies, defective plumbing, careless methods of gathering vegetables and transporting them to market all contribute to the spread of the disease.

The diagnosis of amebiasis is made upon the demonstration of the cysts or the trophozoites of *endamoeba histolytica* in the stools of the suspected person.

To do this D'Antoni⁴ uses a rather elaborate procedure consisting of examination of three normal stools, examination following saline cathartic, examination following saline enema, and finally sigmoidoscopy. This, of course, is done on hospitalized patients.

*Read before the Central Medical Society. November 1947, Jackson, Miss.

The procedure for warm stool examination that we use is as follows: The patient is instructed to take two heaping tablespoonfuls of MgSO_4 at 8:00 a.m. and to report to the office at 9:00 a.m. We use an invalid's commode chair to collect the specimens. The stool is passed and then grossly examined. If it is solid we tell the patient that it will be necessary to have an additional specimen. If a liquid stool is not passed within one hour we find some further encouragement by way of about one ounce of Fleet's phosphate of soda.

Immediately after collection of a liquid stool a direct fecal film is examined. Only those stools in which are found motile amoebae containing red blood cells are considered positive. We have found, in this connection, that there is quite a variation in size in the amoebae found. This procedure is practicable in general practice if a trained technician is available.

Over a period of six and one quarter years we have conducted stool examinations on 724 suspected people, 291, or 39.6 per cent of these stools, being found to be positive for *Endamoeba histolytica*. Of course, this percentage would not be of statistical value because, except in the cases where there was a family check done, there was some indication for stool examination.

One hundred and ten cases had at least one family contact. In a total of 46 instances, more than one member of a family was examined.

Here I must say that without the very excellent work of Miss Mary C. Spann it would have been impossible to collect these cases or, for that matter, to run this number of stool examinations using this technique. Her work has been of the very best and carried on without complaint in spite of the rather unpleasant nature of working with feces.

I have used the presence of eosinophilia as one indication for stool examination. It is present in amebiasis just as it is in infestations with some other parasites though not always. Differential blood counts were run on a total of 198 of this group. Eosinophiles were found in 181, or 91.4 per cent, of these. In 140 of them the eosinophile count was above 3 per cent, ranging from 3 to 27 per cent.

Red blood counts and hemoglobin determinations were done on 169 of this group. One hundred and two showed no degree of anemia; 58 showed mild anemia, (Hg 65 to 75) per cent; 9 showed severe anemia (Hg below 65 per cent).

The most significant thing noted in this group of cases is the relatively small number who had dysentery. Only 23 of the entire group could be called acute amoebic dysentery. Only 44 others even had spells of diarrhea or more frequent stools than normal. The most of the others were constipated. Amoebic dysentery is merely one form of amebiasis and should be considered a complication of the disease just as is liver abscess.

All of our patients ran low grade fever; all complained of G—I distress of one sort or another; weakness and tendency toward easy fatigue were always present. Craig and Faust⁵ describe the symptoms thusly: "The most commonly observed symptoms or physical signs are constipation or attacks of slight diarrhea; underweight, colicky pains in the lower abdomen or right iliac region, with or without tenderness; gaseous eructations after eating; slight nausea with anorexia or a capricious appetite; neuralgic pains in the lower abdomen, back of legs; dull frontal headache; aching in the muscles of the legs, especially upon waking in the morning; backache, disturbed slumber or sleepiness; poor memory and lack of ambition; irritable pulse; arrhythmias; vasomotor disturbances, as flushing of the skin and sweating of the palms of the hands and soles of the feet; nervousness and tachycardia."

That description, of course, could be a description of most anything. However, when we encounter a patient in such a situation without other causes present, we examine him for amoeba. This fact and the fact that sanitary conditions in our surrounding territory are not the most desirable, probably account for our finding this large number of cases.

There are three forms of drugs that are in general use for treatment today. They are alkaloids, arsenicals, and a group of drugs containing a large percentage of iodine.

Emetine, an alkaloid, in daily doses of one grain hypodermically for six days gives remarkable relief to the patient with abdominal pain, nausea, indigestion, etc.; and more especially to cases of acute dysentery. This drug should not be used indiscriminately due to its known affinity to cardiac muscle.

Carbarsone, a relatively non-toxic drug, is an arsenical and provides a good amebicide to use in conjunction with the iodine containing amebicides.

Chiniofon, also known as yatren or anayodin, is a non-toxic drug containing a high percentage of iodine, and depends upon the iodine for its action, as iodine is a potent amebicide.

Vioform, an iodine containing substance with a higher iodine content than chiniofon, is not toxic except in excessive dosage.

Diodoquin is probably the least toxic of the drugs and contains the most iodine. In using these iodine-containing drugs it should be remembered that they are contraindicated in tuberculosis.

The dosage schedule that we follow at present is divided into four ten-day periods; The first ten days chiniofon or dioquin, three tablets three times daily after meals; the chiniofon comes in a 4 gr. tablet; the diodoquin in 3.2 gr. tablets. In cases with diarrhea or dysentery or very pronounced G—I symptoms of any sort, we give emetine concurrently, one grain daily for the first six days. The second ten days we use carbarsone, one capsule ($3\frac{3}{4}$ gr.) T. I. D. P. C. The third ten days repeat the chiniofon or diodoquin. The fourth ten days repeat the carbarsone. Then we re-examine a stool after seven days. We occasionally use vioform instead of the other iodine containing drugs. Chiniofon tends to produce a diarrhea and occasionally the dosage has to be reduced.

Improvement was noted in all cases after treatment was started. They felt stronger, gained weight, their digestion improved, and all of them were aware that improvement was taking place. I do not believe that they would have continued such a long course of treatment had this not been so. A few stopped treatment, but not many. Out of the group of 121 that were re-examined at the end of 40 days' treatment, there were 20 who remained positive. Treatment was continued on these and all eventually cleared up.

Shrapnel⁶ has recently reported a series of 30 cases of intestinal amebiasis treated with Emetine Hydrochloride enteric sealed tablets taken orally. He obtained clinical cure in all cases but one case showed a recurrence of parasites after seven months. Adults were given 2 grains daily for 12 days; children 1 grain daily for 12 days. No toxic symptoms were noted in this group of cases.

In conclusion, I would like to say that I have frequently asked myself the following questions:

1. Are we finding too much amebiasis? I think not. The criterion that we use for diag-

nosis seems to me to leave no doubt that the organisms we find are really *Endamoeba histolytica*.

2. Are we over-treating these patients? We still find some patients who are infested after 40 days of treatment and get negative stools after further treatment.

3. Is there any good point in treating these cases of mild or chronic amebiasis or symptomatic cases? Nearly all cases treated feel better and look better after treatment. The collected literature clearly states that amoebic infestations may progress to the more severe forms very rapidly with lowered resistance.

4. Is there a neuro toxin elaborated by the growth of the *Endamoeba histolytica*? There is a very high incidence of neurotic symptoms in these people but this could be caused by an attending vitamin or nutritional deficiency.

Summarizing:

1. Over a period of six and a quarter years, 291 cases of amebiasis have reported only 23 of which had acute dysentery and 44 of which had diarrhea.

2. Stool examination using very heavy dosage of saline laxatives, collection of the warm, liquid stool, and its immediate examination is a practicable method of diagnosis of amebiasis and may be used as an office procedure, provided that a competent, well-trained technician is available.

3. Amebiasis is more prevalent than is generally supposed.

4. Treatment with the drugs that are in general use today is long, expensive, and inefficient though eventually effective.

5. Compared with the high incidence of amebiasis, true amebic dysentery is unusual and liver abscess is a rarity.

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Discussion

O. G. Eubanks, M.D. (Crystal Springs)—Dr. Johnson has demonstrated by his paper a sincere report and a great deal of work show-

ing the importance of endemic amoebic infection.

I will not attempt to discuss his paper but would like to mention a baffling complication, that is, amoebic hepatitis. The amoebic infection affects the liver in two ways—a diffuse or solitary abscess formation.

Several years ago while attending a clinic at Johns Hopkins a case of amoebic hepatitis was presented which went months without a diagnosis. I patted myself upon the back and remarked that this would never happen to me—but it did. A patient that came under my care recently complained of rigors, high fever and profuse sweating. After careful examination two or three times I was unable to make a diagnosis. He went through the diagnostic mill in three hospitals and no diagnosis was made. During an interval of six weeks he lost 68 pounds and seemed to all concerned that his exit was certain. Many stool examinations and many cultures were made all of which were negative.

Roentgenologists claim that pyramiding of the diaphragm is diagnostic of amoebic hepatitis, however, under the fluoroscope, I think an immobile diaphragm associated with a "stuck" liver is indicative of amoebic liver disease.

After all sorts of treatment and eighteen blood transfusions this man's symptoms were unabated. A statement that Dr. D'Antoni made in New Orleans with reference to amebiasis kept hounding me, that is, "In all obscure fevers try emetine." Finally, with reluctance and against the opinion of all my consulting colleagues, I gave this patient emetine. His fever rapidly subsided, he recovered from the comatose state and ate his first meal in six weeks. He rapidly regained his weight and strength and is living today. At no time, during his many repeated examinations by many consultants, was amoebae found in the stool.

H. C. Ricks, M.D. (Jackson)—I wish to compliment Doctor Johnson on the detailed care he has observed in the preparation of this paper. His research in the field of amebiasis is indicative of what can be done by any practitioner of medicine in any community if he has the urge to know and to render service to his patients.

It is well established that best results in the laboratory diagnosis of amebiasis are

obtained by examining fresh formed or constipated stools. This is accomplished by the zinc sulfate flotation technic described by Faust and others.

When active dysentery caused by *Endamoeba histolytica* is noted it is necessary to examine the liquid stool. This should be warm and fresh in order to observe the amoebae in an active stage. The best method for diagnosis in this stage is to examine a fixed preparation stained by one of the well known staining technics.

Preparations should be made from the whole stool where a saline purge is given, one from the formed portion for cysts, one from the semiformed or middle portion to be observed for the presence of cysts and motile forms, and one from the liquid portion to be observed for motile forms only.

L. T. Carl, M.D. (Jackson)—First I want to compliment Dr. Johnson on the unusually good piece of work he has done in finding and following and treating these patients. One must agree with his criteria for diagnosis, and it makes all of us wonder if we have not been overlooking cases of amebiasis in our practice. Many of us do one or two formed stools routinely on all new cases, but it is probable that we overlook some cases of amebiasis by this method.

I was interested to note Dr. Johnson's mention of the use of emetine orally. In the last few years we have been told that emetine may have toxic effects on the myocardium, and we are advised to take an electrocardiogram after its use to be sure that no myocardial damage has occurred. I am wondering if this oral emetine has this toxic potentiality. The average case of amebiasis does not require emetine, at least not by injection. It is a good symptomatic drug for the relief of diarrhea but does not eradicate the intestinal infection. It is specific for the hepatitis or abscess formation of amebiasis. However, the average case of amebiasis can be treated with one of the arsenicals and one or more of the iodine preparations.

I think we have all been surprised and stimulated by Dr. Johnson's report of a great number of cases of amebiasis in our own neighborhood and it behooves all of us to be on the look-out for these cases.

Medicine in the Delta for the Last 50 Years*

S. W. COLQUITT, M.D.

Sunflower, Miss.

IN this paper I shall not attempt to give you all the facts concerning the practice of medicine in the Delta for the last fifty years, but will concentrate on the outstanding facts. And in my comparative analysis will necessarily apply the state statistical reports to the Delta. In this you will keep in mind the undeveloped state of this section of fifty years ago. The purpose of this paper is to recapitulate some facts of development of economic and transportation conditions of the Delta of fifty years ago and make some comparison of the doctor's life as this section advanced.

This Delta in the early 1900's was sparsely cleared up and drainage had not yet begun. This gave birthplace and habitat to hordes of mosquitoes, sand flies, and Buffalo gnats. A governor in one of our southern states in 1902, opposing the purchase of delta land for an institutional location, said in a speech before the legislature; "The plasmodium malaria oozes up from these swamps and lagoons like a fog in the early morning." In those days even the state officials thought the name malaria meant "bad air." Of course what was oozing up was the hordes of mosquitoes. Before the program initiated by the Health Department was inaugurated and drainage and screening practiced the mosquitoes did come up in clouds. So bad were they in the early 1900's stock—even chickens—were killed by them. Small wonder the death rate was so great among people.

This brings us to the diseases of that time. Of course malaria was the worst. In August 1907 I treated 763 cases of malaria in my own practice and I counted my practice an ordinary one. Have you younger doctors ever seen a case of hematuria or black water fever, or swamp fever? My experience was that two out of every three cases of frank "malarial hematuria" died. Some of this large fatality was due to the resistance people had to quinine. I remember the belief was more or less prevalent then that if you drank enough whiskey you would not die of malaria. They

were right; the whiskey killed them. But people would not allow screen doors to stay closed. It made the house too hot; and then when the house was "scoured" the screen door must be opened so the floors would dry. As a rule the people tried every nostrum their friend advised to cure the **ague** before calling in the doctor, and even then they took the quinine prescribed only spasmodically. The belief was common that the quinine caused the bloody urine.

Another contributing factor to the high death rate was the sympathizing friends. It was a common practice for the neighbors to gather at the house of the patient and tell him how many of their family or friends had suffered of hematuria and nearly all died; how they had grieved over their death and what an impressive funeral they had. Also, the bloody urine was so obvious of hematuria that all were aware of the presence of it and fright or shock added to the mortality. Education, mosquito control and the work of our State Health Department eliminated malarial hematuria entirely and reduced malaria to a minimum.

Smallpox was a hydraheaded monster in the early 1900's. To the laity Jenner was a terrible character who advocated infecting the arm of people with an infection which caused a very sore arm and high fever, which was done in an effort to protect against smallpox. It seems strange now, in our present understanding of vaccination, that people were so ignorant as to resist smallpox vaccination. If you remember, witchcraft was accepted in intelligent New England in the late seventeenth century. This was met with in our Delta in the early 1900's. I remember one instance in which I was told by a father when I was vaccinating his child for smallpox, "If that child dies I will kill you." Of course the child did not die, and through vaccination the epidemic was controlled. Smallpox is now all but a memory.

Diphtheria took many children in the early 1900's. Twenty years ago I was attending a burial and in looking over some graves I noticed five small ones with small headstones at each one. On reading them I found they were of the same family and only one or two

*Read before the fifty-first semi-annual meeting of the Delta Medical Society, Greenville, Miss., April 13, 1949.

years difference in age. This aroused my curiosity and I made some inquiry. I found that diphtheria took five or six children of one family in one month. This was before the Delta doctors had or took access to antitoxin. This reminds me of the story of the Irishman who went to church one Sunday night. Not being a church goer and not a Bible student, he knew nothing of the Crucifixion. It so happened the text taken by the preacher was the Crucifixion of Christ. On early Monday morning following, the Irishman met a friend Jew and knocked him down and began pummeling him. The Jew asked him; "Pat, why do you beat me?" Said Pat, "You killed Jesus Christ." "Listen Pat," said the Jew, "that happened 2000 years ago." "Makes no difference," said Pat, "I only heard of it last night." So it was in early 1900's few knew of or could obtain diphtheria antitoxin.

Tuberculosis took a terrible toll in these years. Although doctors knew or had a good idea of the care and treatment needed to control this disease few had the benefit of proper facilities, and institutions for the treatment were not available. I have seen whole families die of T. B. within a few years—and this in spite of effort on my part. This frightful toll resulted from two causes; refusal of the family to heed my advice and inability to provide proper food and isolation. Our Health Department can be given all the praise for education of the people and providing the necessary aid for control of T. B. which has resulted in the low death rate and control of today.

Typhoid fever was one of our greatest causes of loss of time as well as lives. A patient suffering of typhoid fever was out of active life for several months besides taking one or more of the family out of earning who acted as nurse and caretaker. For this reason, from an economic viewpoint typhoid fever was one of our most damaging diseases. Failure of the laity to coöperate or to understand how much sanitation had to do with control of the fever caused widespread epidemics and this was an economic injury to a community as well as loss of life. The death rate in rural districts in the early 1900's was approximately 45 per cent.

Vaccination (or inoculation) was resisted by the people and only after the efforts of our Health Department were the people brought to understand what protection inocu-

lation gave. It took years to convince some people that a hog wallow around a pump was not healthful.

Pneumonia was a very fatal disease in the early twentieth century. Consider the conditions then. No roads, no telephones, no hospital facilities and no aid for the doctor other than the family or some friend. No wonder Osler said "Pneumonia is the most fatal of all acute diseases, killing more than diphtheria and outranking even consumption as a cause of death." Did you know air was considered detrimental to a pneumonia patient by the laity? You could leave a sick room properly ventilated but when you got back even the cracks would be chinked.

Did you ever hear of an old woman baby doctor? After they had treated a baby for several days the doctor was called—sometimes the baby was dead or so near dead that the doctor had no chance. When medicine was left with definite instructions the family or the "old lady" doctor used their own remedies. Did you ever hear of **chicken saffron** as a baby medicine?

Of course obstetrics and emergency surgery was a source of definite concern to the doctor in the Delta. One doctor wrote and I quote: "You never heard of an obstetrical case until you were called." Placenta previa, malpresentation and narrow pelvis were met with as you could. Surgery in strangulated hernia or acute appendicitis were operated on on the kitchen table by oil lamp and with only what help you could pick up. Let's consider for a moment the difficulties and lack of facilities the doctor coped with in the early half of the twentieth century and what they enjoyed in the later half. If some of you could have seen road conditions fifty years ago you could better understand the Queen of the Nile's expression after a visit to Solomon. Certainly words fail in an effort to draw a picture of what travel was then, indeed only the half could be told. The muck and mire of winter and spring was converted into concrete by wind and sunshine in summer and fall.

The bark of the bullfrog in spring would be succeeded by the raucous song of the locust or katydid in summer and fall.

Transportation was slow. A mere five- or six-mile call meant hours in the day and at night the greater part of it. Doctors often left home to be gone for a few hours and would not return for a few days.

Hospital facilities were vile. One doctor wrote, "I sent my white patients to Memphis and my negro patients to Vicksburg. Since none ever came back I quit sending them." The doctor of the Delta was indeed a lone wolf.

Now we have modern highways, telephones, automobiles and other aids to the doctor. The facilities of the state and government clinics have indeed transformed the doctor's work into a thing of pleasure.

The spectre of death the old doctor associated with each and every bad case has been converted into a vision of hope by the advancement of medical science.

A few statistical records will give you a better idea of this statement.

There were more doctors in the Delta in the early 1900's. In 1906 there were 188 practicing physicians in the five Delta counties and at present 152.

There was not one hospital, but now (including clinics) sixteen.

Our Health Department was established about 1917. Since then it has grown to a second-to-none place in the union and through

its aid in preventive work has resulted in immense benefits to the state in saving life as well as loss of time.

Recent discoveries by medical science such as the sulfanomides, penicillin, etc., and improved methods of administration (glucose, plasma and whole blood) all have done wonders in reducing the death rate. War is a terrible thing to come upon a nation, but the two great wars which have cursed our people in the period covered by this paper have also resulted in benefit in the form of advancement of medical science. Transfusion was only done in the best hospitals and then with misgivings; now a sergeant or even soldier of the line on the battlefield gives plasma.

I could go on *ad infinitum* but time will not permit. Suffice it to say we have learned that prevention has proved a greater aid than a cure.

My appreciation is extended to the State Health Department and Dr. Felix J. Underwood, also Doctors J. W. Lucas, B. H. Booth and J. A. Clark for their much appreciated assistance.

The magnitude of the task which still lies ahead should not be underestimated. Tuberculosis even now takes more than 45,000 lives a year in our country, and is a serious cause of disability among men in the productive period of life. The disease still ranks high among the causes of death at most age periods. Louis I. Dublin, Ph.D., Health Progress 1936 to 1945, Metropolitan Life Insurance Co.

The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

It has been noted that people in America forty-five years of age are requiring professional services to more than half the doctors' time. The number past forty-five is on the increase. This is destined to be quite an item in the demand for more doctors in this country as time goes on.

A five-dollar reward has been offered by our efficient state board of health for a positive slide for malaria and we understand that less than a dozen positive slides have been reported this year. This is a remarkable record for a state that has had such a reputation for malaria like ours. But even so malaria remains the big health problem of the world. It is estimated that 300,000,000 people have malaria each year and that 3,000,000 die of the disease annually, or one in a hundred Malaria strikes at the agricultural heart of

the world. These 3,000,000 victims of malaria are too sick to work at crop time. Hence malaria is a big social and economical factor in the world.

Dr. E. L. Henderson of Louisville, Kentucky, was elected president of the American Medical Association at the recent meeting in Atlantic City. He is a past-president of the Southern Medical Association and the Southeastern Surgical Congress and many other medical organizations. He has been very prominent in the American Medical Association for many years and at the forefront in handling policies of the Association, especially regarding socialized medicine. He has spent much time in the study of medical problems throughout the world. He is a prominent surgeon in his home city, but at the same time we have had but few men in the nation who have contributed so much time and effort to organized medicine. We congratulate Dr. Henderson and the American Medical Association as well.

Appendicitis, like the poor, we still have with us. It is still a surgical disease of much importance. There is yet no medical treatment in sight to replace the surgical treatment. Even with penicillin and the sulfa drugs, early diagnosis and early operation should be the order. It is safer to be operated on for acute appendicitis within six hours of the onset in a six-bed hospital by a country surgeon than by a Mayo in the largest hospital in the world three days later. About three days' time usually elapses between the onset and the operation. About seventy-five per cent of the cases of appendicitis should be diagnosed without much effort, but some are yet baffling. Pain, nausea, tenderness, fever and leucocytosis are the standard symptoms and have been for years. To these we add two more: the willingness to be operated upon and coöperation in taking a good anesthetic. A pain in the abdomen that lasts without a let-up for one hour should be counted appendicitis until it can be proved otherwise.

When it comes to putting on a medical meeting, Dr. L. H. McDaniel of Tyronza takes the prize. His meeting in May was evidence of this.

The Distinguished Service Award to Dr. Seale Harris of Birmingham by the American Medical Association is greatly appreciated by

his friends throughout the nation. They know that he is most deserving. Dr. Harris is a fine internist, the discoverer of hyperinsulinism, an editor, and author, a good citizen and a most cordial and courtly friend.

Infantile paralysis is still one of our most dreaded diseases. It is no respecter of persons, but yet it strikes the child more often. It is assumed to be spread by a virus but the germ has not yet been isolated. The conquering of this disease is a great challenge to the entire profession. Every practitioner should make it a part of his business to make observations and ask his clientele to do likewise in order to find just how it is transmitted and how it may be prevented.

The second quarterly meeting of the Northeast Mississippi Medical Society at New Albany was a good one. It was quite well attended. Dr. H. King Wade, a native of Union County, was the guest speaker. His address was one of the best and most practical in the field of urology we have yet heard. We are always glad to have a visit from him.

News and Comment

E. L. HENDERSON AMA PRESIDENT-ELECT

Dr. Elmer L. Henderson of Louisville, who took the helm of his county society thirty years ago and has been a leader of national scope for a decade, is the new president-elect of the American Medical Association. His election by the House of Delegates was unanimous.

"If we are to endure as a free medical profession we must stand united and present a solid front," he told the delegates. "We have just begun to fight. With the help of Almighty God, I pledge you that we will continue to fight and we will win."

Dr. Henderson was elected to the House of Delegates in 1937, to the Board of Trustees in 1939, and has served as Chairman of the Board since 1947. A diplomate (1938) of the American Board of Surgery, he has served as president of the Southeastern Surgical Congress, Southern Medical Association, Kentucky State Medical Association, Jefferson County Medical Society (1918) and the Alumni Association of the University of Louisville, where he obtained his degree in medicine in 1909.

Dr. Henderson was born March 23, 1885, in Garnettsville, Ky., and entered the practice of general surgery in Louisville in 1911. He is director of the Kosair Crippled Children's Hospital and on the staff of the Kentucky Baptist Hospital and St. Joseph Infirmary. He is a fellow of the American College of Surgeons.

Dr. Henderson served as a major in the Medical Corps in World War I, for nine months overseas, and was a lieutenant-colonel in the Medical Reserve Corps until 1929. In World War II he was chairman of the Fifth Service Command Committee Procurement and Assignment Service for Physicians, Dentists and Veterinarians. Since 1942 he has been special surgical consultant to the Army Air Surgeon's Office.

He is a member of the American Legion, a 32nd degree Mason and a member of the Pendennis, Filson and Big Spring Golf clubs.

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DR. SEALE HARRIS AWARDED DS MEDAL

Dr. Seale Harris of Birmingham, Ala., was the recipient of the Distinguished Service Medal of the American Medical Association at the June meeting. The medal which was presented to him in Atlantic City was first awarded in 1938 in recognition of distinguished service "in the science and art of medicine." Its ten other recipients are among the most widely recognized contributors of this century to clinical progress in America.

Dr. Harris dearly, beloved to Mississippi physicians and recently admitted to member-

ship in our Fifty-Year Club, is best known for his valuable contributions to the understanding of diabetes, to its opposite condition, hyperinsulinism, and to the general conceptions of the science of endocrinology.

The other recipients have been: first, Rudolph Matas of New Orleans, great vascular surgeon; James Bryan Herrick of Chicago, distinguished physician and hematologist responsible for the first description of sickle cell anemia; Chevalier Jackson of Philadelphia, pioneer bronchoscopist; James Ewing of New York, classical authority upon neoplastic disease; Ludvig Hektoen of Chicago, celebrated pathologist and immunologist; Elliott P. Joslin of Boston, beloved student of the therapy of diabetes; George Dock of Pasadena, well-known teacher and investigator of the human digestive processes; George R. Minot of Boston, who first used liver in the therapy of pernicious anemia; Anton J. Carlson of Chicago, inspiring teacher of physiology; Henry A. Christian of Harvard, well-known internist; and Isaac Arthur Abt of Chicago, pediatrician, and author and editor of widely used pediatric textbooks.

SOUTHERN BRANCH AMERICAN PUBLIC HEALTH ASSOCIATION

Mississippi's public health program was recognized in the selection of representatives who served in key positions on the program of the third annual meeting of the Southern Branch of the American Public Health Association held in Dallas, Texas, April 14, 15, 16, 1949.

Dr. Felix J. Underwood, state health officer, and member of the Governing Council of the Southern Branch of the American Public Health Association, was one of the panel leaders in the discussion of "Present Trends in Public Health Practices."

Among the Mississippi representatives from the state health department on general session programs were: Dr. J. A. Milne, Miss Cassie B. Smith and Miss Margaret E. Rice.

Several Mississippians were selected for section meetings. Dr. A. L. Gray, director of the Division of Preventable Disease Control, served as chairman of the health officers' section; Dr. Andrew Hedmeg, director of the Harrison and Jackson County Health Departments, discussed before this section the subject, "What Can Be Done to Attract Young Physicians into the Field of Public Health with Relation

to Security in Position and Freedom from Political Interference in Program"; Dr. H. C. Ricks, director of State Hygienic Laboratories, discussed "The Mississippi Clinical Laboratory Advisory Service;" Miss Gladys Eyrich, supervisor of Mouth Health, presented a paper "Forward I Look and Backward" to the dental health section; Miss Alice Glenn Keaton, supervisor of Nutrition Services, and Dr. James H. Ferguson, obstetrical consultant with the Mississippi State Board of Health, and instructor in Tulane Medical School, led a discussion on "Use of Visual Aids in the Educational Program on the Control of Toxemia in Pregnancy" before the nutrition section.

ARMY NEEDS DOCTORS

The Department of the Army is urgently in need of public health officers to serve in a civilian capacity with the occupation forces in Japan. These positions, which involve supervision of Japanese prefecture (state) health departments in all phases of preventive medicine and medical care programs, offer an excellent opportunity for broad experience in public health.

Minimum acceptable qualification requirements are a degree in medicine plus one year internship. Experience in public health is desirable but is not mandatory.

The salary for these positions is \$6235.20 per annum plus 10 per cent post differential with quarters provided at no cost to the employee. Individuals selected for appointment must agree to remain a minimum of two years. Transportation is furnished to and from Japan. Dependents may join the employee in approximately 6 to 8 months after his arrival in the command.

Applicants may make formal application by submitting Civil Service Commission Standard Form 57 to this office. Forms may be obtained from any Class A post office.

ANNOUNCEMENTS

The Oates Clinic announces the association of Dr. William E. Weems, internal medicine and cardiology, Fifth Avenue, Laurel, Miss.

DEATHS

DR. CALEB MIDDLETON

Dr. Caleb Middleton died in a Biloxi hospital on April 29. Dr. Middleton had recently celebrated his eighty-first birthday.

A native of Hinds County, Dr. Middleton had lived in Biloxi for a number of years as a member of the Veterans Facility staff.

He is survived by one sister, Mrs. Joseph R. Lane, of Jackson, and a number of nieces and nephews.

DR. JOHN W. MELVIN

Funeral services for Dr. John W. Melvin, 61, prominent Madison County physician fatally injured in an automobile accident four miles south of Canton on Highway 51, April 29, were held from the McBride Memorial Presbyterian Church at Camden with interment at the Camden cemetery.

Dr. Melvin, one of three persons hurt in the accident, died at St. Dominic's hospital in Jackson April 31 at 1:30 p.m. from internal injuries sustained when his automobile left the highway and turned over three times.

The son of the late Mr. and Mrs. E. W. Melvin of Madison County, Dr. Melvin had practiced medicine in Camden since 1912 with the exception of the time that he spent with the army during World War I. He married Miss Mamie Shelby, daughter of Dr. and Mrs. Jack Shelby of Camden, in 1918, and was associated with Dr. Shelby until his death. He recently had opened an office in Canton, although he continued to reside at Camden. He was a member of the Presbyterian church, an elder and a Mason.

Dr. Melvin is survived by his widow; one son, J. E. Melvin; one grandson, Ed Melvin, all of Canton; and two brothers, Henry Melvin of Jackson and the Rev. Marion Melvin, prominent pastor of an Oklahoma City, Okla., Presbyterian church.

DR. SAMUEL H. McLEAN

Dr. Samuel H. McLean, former secretary and executive officer of the State Board of Health who retired from active practice in 1932, died April 21 at Baptist Hospital. He was 77.

He leaves his wife; two daughters, Mrs. Rabian D. Lane of Jackson and Mrs. Carl R. Coers of Oxford; three sisters, Miss Kathleen McLean, Mrs. Fannye Brueck and Mrs. Gulie Craft, all of Jackson, and a brother, J. Nick McLean of Jackson.

Dr. McLean was born at Lexington in Holmes County. He attended public schools there, Henry College at Versailles, Ky., and was graduated from the Tulane Medical School in 1898. The following year he began practice in Jackson.

He was chief of the Hinds County Health Department for eight years, and from 1908 to 1914, by appointment of the late Gov. E. F. Noel, was secretary and executive officer of the State Board of Health. He was physician for Belhaven College fifteen years.

Dr. McLean was a fellow in the American College of Surgeons, member of the American, Southern and Mississippi Medical Associations.

DR. LEWIS J. RUTLEDGE

Services for Dr. Lewis Jones Rutledge of McComb, Miss., were held at his residence in McComb April 26, followed by burial in Summit. He was 63.

He was a graduate of the University of Tennessee Medical College.

Dr. Rutledge leaves his wife, Mrs. Anna McCoy Rutledge of McComb; one son, Dr. Lewis James Rutledge, New Orleans; one daughter, Mrs. Edwin Guy of State College, Miss.; five sisters, Mrs. Katherine Covington, Mrs. Alice Lee, both of Summit, Mrs. J. P. Knapp of New York, Mrs. Irene Bacon, Myrtle Grove, Fla., and Dr. Elise Rutledge of McComb; two brothers, W. O. Rutledge of St. Francisville, La.

DR. M. B. JERNBERG

Dr. Malcolm Benjamin Jernberg who had ministered to the ill and suffering of Tunica County for the past 22 years died May 18 in Methodist hospital in Memphis.

Dr. Jernberg's death was unexpected although he had been hospitalized for the past two weeks, recovering from a major operation. The family had been encouraged by his recuperation from the surgery and he had been expected to return to his home at Hollywood.

Dr. Jernberg was 61 years old. He was born on November 15, 1887, at Water Valley, Mississippi.

He was a member of the Episcopal church and of the Six-County Medical Society.

Survivors are his wife, Mrs. Bess Jenkins Jernberg, and his daughter, Mrs. Perry Funk of Marietta, Ga.; one brother, Palmer Jernberg of Paragould, Ark., and a sister, Miss Mollie Jernberg of Water Valley, Mississippi.

DR. H. B. POWELL

Henry Bradford Powell, retired physician and surgeon, died at Veterans' Administration Center, where he was a patient.

Dr. Powell was 83 years old and was born in Whitby, Ont. He was graduated from Pickering College and University of Toronto and for two years did postgraduate work in surgery in Berlin and Vienna.

Dr. Powell practiced in Chicago, before coming to the Coast 40 years ago. He served in the Spanish American War and in World War I as a major with the 139th Field Artillery. He was commissioned a lieutenant colonel in October 1920.

He was a life member of Lawn Chapter 205 Masonic Order of Chicago, and also a member of McLeod Lodge 424 F&AM, Ocean Springs, Hamassa Temple of Meridian, and the American Legion of Ocean Springs.

Dr. Powell is survived by his wife, Mildred Frances Powell; a stepson, Numa F. Theriot, Miami, Fla.; and two sisters, Misses Clara and Minerva Powell, Whitby, Ont., Canada.

He practiced in Ocean Springs for a number of years and in 1940 accepted an appointment as a CCC officer. He had been in bad health for a year or more.

DR. J. A. HARDIN

Dr. J. Allen Hardin, age 68, died at his Calhoun City home of a heart attack on Friday night, April 25. Although his health had been poor for a year or so, his death came as a surprise to his wide circle of friends.

Dr. Hardin, a native of Calhoun, practiced his profession for many years at Derma before moving to Calhoun City, where he entered practice some years ago. He was a graduate of Memphis Hospital Medical College.

He owned quite a lot of farm and timber lands in the county and engaged for many years in stock raising and farming.

Dr. Hardin had a wide circle of friends through the state and was held in high esteem by the people of this section and elsewhere. He began the practice of medicine in the old "horse and buggy" days and put in many years of his life riding through all kinds of weather and over all kinds of roads at all hours of the day and night.

Surviving are his wife, Mrs. Willie Strong Hardin, of Calhoun City; two sons, David Howell Hardin and John Harrod Hardin, of Calhoun City; a daughter, Mrs. Alene Hardin Fowler, of Tampa, Fla.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson
Otolaryngology—Charles R. Hume
Ophthalmology—Edley Jones, Vicksburg
Obstetrics and Gynecology—J. F. Lucas, Greenwood.
Orthopedics—Thomas H. Blake, Jackson.
Public Health—Felix J. Underwood, Jackson.
Pediatrics—Harvey F. Garrison, Jackson.
Radiology and Roentgenology—Karl O. Stin-gily, Meridian.
Pathology—R. M. Moore, Vicksburg, Miss
Surgery—W. H. Parsons, Vicksburg.
Urology—Temple Ainsworth, Jackson.

PEDIATRICS

THE ADVISORY OF BREAST FEEDING, A SURVEY OF THE SUBCOMMITTEE OF THE COMMITTEE ON MATERNAL AND CHILD FEEDING, NATIONAL RESEARCH COUNCIL—C. Anderson Aldrich, Rochester, Minn., J.A.M.A. 135:915-16, Dec. 6, 1947.

"Breast milk is the ideal food in the first few weeks of life; therefore other foods and vitamin supplements must be added. To a degree it prevents or decreases the severity of many gastro-intestinal disturbances and is of therapeutic value in many such disturbances where other foods are not adequate or assimilable. It is likewise an economical food. Breast milk stations are advised for urban areas.

There are many who maintain that breast feeding is of great psychologic value for both infant and mother, though concrete evidence for this is still lacking. It is probable that artificially fed infants, if properly held by the mother, also obtain a degree of gratification and close contact comparable to that of the breast fed baby.

Contraindications to breast feeding may be pathologic (local conditions of breast or nipple, or a general disease process) or be psychologic (faulty antepartum attitudes, mistaken ideas, etc., which cannot be handled as adequately postpartum). Insufficiency of breast milk necessitates only complemental feeding and is no contraindication."

COMMENT: It is a very common occurrence in our present times for mothers to either refuse or fail to nurse their babies from the breast. We are inclined to still hold to the idea that breast feeding is very much

the best in many cases; however there are instances in which breast feeding is not satisfactory and it has been our privilege to see quite a number of babies who suffered greatly because of the fact that they were kept on the breast too long when the milk was either not sufficient in quantity or inadequate in quality. One of the greatest handicaps that we see is nursing babies at the breast too long; in other words, we see babies in our clinic every day who have been either breast fed or on the bottle until one and a half, two and even three years of age. This contributes to an anemia and malnutrition in general, and certainly should be condemned and should be taught to the mothers that such things should not happen because of the ill effects on the child.

VA PATHOLOGICAL REPORT

Present Illness: A 29-year-old white male was admitted to the Station Hospital at 10 a. m., 11-19-42 with severe headache and fever of one day's duration. His condition precluded the taking of a detailed history.

Physical Examination: T. 104, P. 120, R. 30, B. P. 118/76. The skin of the trunk and extremities showed scattered purpuric areas. The pharynx was slightly injected but the heart and lungs were negative. The liver and spleen were not enlarged. Moderate muscular rigidity was present with a positive Kernig and questionable Brudzinski sign; there was no Babinski reflex.

Laboratory Data: Spinal fluid: 61 cells per cu. mm. with 98 per cent polynuclears. Sugar 96 mg. per cent. Smears of spinal fluid, spinal fluid and blood cultures were taken.

Course: The patient was given 6 gms. of sulfadiazine immediately and 1 gm. every 4 hours thereafter. The patient developed cyanosis and became restless but rational and oriented. There was extreme sensitivity of the legs requiring elevation of the bed clothes. By midnight of the day of admission, although the temperature became subnormal, the pulse and respirations rose. During the night respiration became shallow "grating" and the pulse very rapid and thready. He died at 7:50 a. m. on 11-20-42, and it was the clinical impression that death "was in the nature of a collapse, rather than toxic."

State Board of Health

Felix J. Underwood, M. D.

PREVENTABLE DISEASE CONTROL

January 1 - June 30, 1949

by A. L. Gray, M. D., Director

Acute Communicable Diseases

Measles has been the most prevalent communicable disease in this period as indicated by the calls for immune globulin. Since January 1, 1949, 12,726 x 2 cc. of globulin have been distributed to physicians, health departments and hospitals. This exceeds by far the amount distributed in any other comparable period.

Poliomyelitis continued an unusual prevalence through the preceding winter months and has projected itself into this semiannual period in much greater proportions than in any recent year. To May 26 had been reported 33 cases in the state compared to an average of 15 cases for the same period in the previous 5 years. Nineteen counties have had one or more cases with two counties showing unusual concentrations. Hinds County has had 10 cases and Coahoma, 4. Humphreys and Washington counties had 2 each and the other cases were well dispersed over the state. Evidence of concentration in two counties in the usual low and the unusual state total in the pre-polio season may be a serious omen.

Three cases of smallpox occurred in Natchez in April which resulted in an extensive vaccination program by the Adams County Health Department.

One case of leprosy was discovered in Vicksburg and transferred to the Marine Hospital at Carville.

Other diseases have not shown undue prevalence except that typhoid fever has shown a slight increase over previous comparable periods.

Working With Private Physicians

As of the middle of May, the professional liaison officer completed visiting every physician in the state, having started this task in July, 1948. It has long been felt that the

private physician is in a strategic position in the public health program and that ordinarily he will practice and promote preventive medicine in coöperation with health agencies to the extent that:

- a. He understands his opportunity
- b. Realizes his obligation
- c. Is urged and assisted by official health personnel in promoting community health

Physicians made numerous valuable suggestions and criticisms. Since this work was started, there has been a gradual increase in morbidity reporting and reporting of sex contacts of primary and secondary syphilis. As a result of this liaison the State Board of Health and county health departments can be of more assistance to physicians and vice versa. The work of revisiting all physicians will get under way before the end of this semiannual period.

Epidemiological Investigations

The epidemiologist has done splendid work in investigating numerous suspected cases of communicable diseases for the purpose of diagnosis, determining the source of infection, etc. This work is summarized below:

Type of Disease	No. Suspects Investigated	No. Found to Have Disease
Malaria	9	2
Typhoid Fever	34	24
Typhus Fever	12	4
Smallpox	11	3
Undulant Fever	26	21
Leprosy	2	1

In addition an outbreak of food poisoning in north Mississippi was investigated. This outbreak was found to involve from 120 to 130 cases in Coahoma, Prentiss, DeSoto, Tunica, and Tippah counties on April 9, 10, and 11. His studies were adjunctive to splendid immediate work of local health departments. The cause of this outbreak was proved to be staphylococcus toxin in coconut cream pie distributed by a Memphis baking company.

The Battle Against Syphilis and Gonorrhea

The Mississippi program continued to draw national attention because of its scope, effectiveness and methods. Stress has been continued on case finding, diagnosis, and treatment, with much more emphasis on a public informational program. In the first four months of this period 8,694 cases were admitted to rapid treatment centers bringing total admissions, since the rapid treatment centers were opened, to 88,076 or 4.4 per cent of the total population of the state.

The public informational program was carried on with increasing tempo. A pamphlet of Negroes relating to syphilis went into most of the Negro homes of the state through Negro school children and other channels. The film "Feeling All Right" was shown to 961 audiences of 163,000 people in the two months' period—March 15 to May 15.

The special syphilis survey team made surveys in six counties in conjunction with local health departments. Counties surveyed and approximate results are shown below:

<i>County</i>	<i>No. Blood Tests</i>	<i>Cases Referred to Treatment</i>
Sunflower	13,500	1,200
Sharkey-Issaquena	5,000	700
Washington	15,000	2,000+
Humphreys	7,000	500+
Lowndes	10,000	1,000
(in process est.)		

Facts continue to accumulate to indicate that syphilis has been reduced roughly 50 per cent since 1942.

Tuberculosis

Tuberculosis Control Unit has continued its service to the county health departments by developing and interpreting 14 x 17 inch films on cases, contacts and suspects. It has also operated four mobile x-ray units in mass chest surveys over the state. The load has become so great on this staff that there is great need for additional medical and technical assistance.

The following reflects the accomplishments in the semi-annual period:

Total films developed and interpreted	149,539
Number new cases found through	
above	612
Number counties in which mobile	
units operated	39

The counties in which mass or spot surveys were done were: Bolivar, Sharkey, Issaquena, Holmes, Lowndes, Quitman, Yazoo, Hancock,

Montgomery, Yalobusha, Pearl River, Washington, Leflore, Winston, Neshoba, Calhoun, Kemper, Noxubee, Adams, Lamar, Smith, Hinds, Chickasaw, Claiborne, Covington, Lafayette, Newton, Jones, Jasper, Jefferson, Grenada, Lauderdale, Scott, Pontotoc, Clarke, Lee, Rankin, Sunflower and Warren.

Cancer Control

This program continued as a joint one by the Mississippi Division of the American Cancer Society and the State Board of Health with advisory service from the State Medical Association through its official committee and from tumor clinic directors and others concerned. It has been further refined and adjusted on the basis of experience, demands and funds available.

New cases continue to be referred at a greater rate than funds available can serve, but many cases seeking service are terminal cases about which little can be done. Flat per diem rates for hospital care including room, drugs, anesthesia, laboratory and other items have been worked out and are now in operation. A flat rate for diagnostic evaluation has also been worked out and put into use.

There are not enough funds from society, state and federal sources to meet present demands for indigent care. This has led to much difficulty in trying to use available funds for the types of patients which will receive greatest benefit.

VITAL STATISTICS

by R. N. Whitfield, M.D., Director

At the time of the preparation of this report tabulations had been completed on causes of death in Mississippi for the year 1948. These statistics reveal marvelous reductions in preventable causes of death in this state. Typhoid fever, once an annual scourge in Mississippi, has been practically eliminated. Only two deaths from typhoid fever were reported in the state last year. Also, only twelve deaths occurred from malaria. In 1921 there were 1956 deaths from tuberculosis. Last year the number was 668. Notable reductions have occurred during these years in pellagra, scarlet fever, diphtheria, intestinal infections and other conditions.

On the other hand, cancer deaths numbered 1906 last year. In 1925 the number was 897. During the same period heart disease deaths increased from 1973 to 4339.

Bleeding of the Last Trimester of Pregnancy*

JOHN W. HARRIS, M.D.†

Madison, Wisconsin

BLEEDING in the last trimester of pregnancy is not of frequent occurrence, but when it does happen it is usually of such serious import that it demands the careful consideration of all practitioners of obstetrics. This is all the more true when it is remembered that this complication is usually an emergency and most authorities agree that few obstetric complications are so frequently mismanaged.

Except in rare instances such as traumatic or spontaneous rupture of the uterus, cervical polyps, ruptured varicosities and the like, bleeding in the last three months of pregnancy is due to one of two causes: placenta praevia or premature separation of the normally implanted placenta. The former has been designated as inevitable hemorrhage, since if the internal os is either partially or wholly covered by placental tissue, hemorrhage will surely occur when the lower uterine segment begins to form and the placenta thus becomes partly detached. The latter, in contrast, has been called accidental hemorrhage, other suggested terms for the same condition being abruptio placentae and ablatio placentae.

ETIOLOGY. The cause of placenta praevia and premature separation of the normally implanted placenta are unknown. Time does not permit a discussion of the various theories proposed to explain the two conditions, but attention should be called to the frequency of association between premature separation and the late toxemias of pregnancy, especially of the renal and vascular varieties. Just what this relationship is we do not know, but it is generally stated that premature separation occurs about four times as frequently in toxemic patients as in those in whom toxic manifestations are absent.

SIGNS AND SYMPTOMS. The most characteristic sign of both of the complications under consideration is bleeding. As a rule it

appears in the last three months of pregnancy or early in labor, although undoubtedly many miscarriages are due to the same causes in spite of the fact that the etiology is not so easily determined. Depending upon the amount of separation of the placenta, the initial blood loss may be slight or it may be great. However it is unusual for the initial hemorrhage to reach amounts sufficient to jeopardize seriously the life of the patient.

In placenta praevia the hemorrhage is external. The same is more frequently true of premature separation of the normally implanted placenta but in a number of instances the bleeding is concealed due to the fact that the area of separation does not reach the placental margin and a retroplacental hematoma is formed, or else the blood escapes into the amniotic sac and its exit is prevented by the ball-like action of the fetal head.

In placenta praevia the bleeding is painless and tends to be intermittent. The uterus upon palpation preserves its normal size, shape and consistency. On the other hand, premature separation of the normally implanted placenta is accompanied by sudden, severe, and continuous pain. The uterus is sensitive to palpation and in many cases is hard, almost liganeous, in consistency. It is often noted that the uterus has become larger than before the accident and a bulge at the placental site may be noted.

If available, soft tissue roentgenographs of the uterus will give much information as to the location of the placenta and are of more value than other roentgenographic procedures such as distention of the bladder with radio-paque media.

Differential diagnosis is usually made by vaginal examination. In the case of placenta praevia the cervix is found to be unusually soft and if the finger is carried up to the internal os the sponge-like placenta can be palpated. In premature separation of the normally implanted placenta the cervix is found of normal consistency and no placenta tissue can be palpated at the internal os. However, as will be explained later, no vaginal examination should be made until active treatment is ready to be instituted.

*Delivered at the fifty-ninth annual session of the Mid-South Postgraduate Medical Assembly, Memphis, Tenn., Feb. 10-13, 1948.

†From the Department of Obstetrics and Gynecology, the University of Wisconsin.

TREATMENT. Few obstetric complications are so frequently mismanaged as is bleeding in late pregnancy. This can be attributed largely to a combination of failure to recognize early the seriousness of the condition, the use of vaginal examination before treatment is ready, unwise packing of the vagina, and attempts at rapid delivery through the birth canal either instrumentally or by the administration of oxytoxic drugs.

It should always be remembered that bleeding in the last three months of pregnancy is invariably serious and, under no circumstances is to be disregarded. When first confronted with such an emergency the question of hospitalization of the patient must be settled. Due to the lack of adequate assistance and the difficulties in applying a number of necessary procedures such as blood transfusion in the home, such patients should always be hospitalized when adequate facilities can be made available. If the initial bleeding which is rarely serious is heeded, there is usually adequate time to transport the patient to the hospital and there is little excuse to treat such a complication in the home. It is not impossible, but it is exceedingly difficult, to treat a case of hemorrhage in late pregnancy in the home. If the patient is to be transferred to the hospital, it should be done without delay and with as little disturbance as possible. The administration of morphia not only allays the patient's fears but often causes the bleeding to decrease. Under no circumstances should a vaginal examination be done. To do so will only increase the hemorrhage, especially in the case of placenta praevia. Unless the bleeding is excessive, it is best not to pack the vagina and any attempts to pack the cervix will result in more profuse hemorrhage. In those cases where the blood loss is already excessive the vagina may be packed, taking undue care to preserve the most rigid aseptic technic. Vaginal tamponade increases the risk of infection and is to be avoided whenever possible.

Immediate preparation for transfusion should be instituted. Bill, of Cleveland, and others have shown the undoubted value of transfusion in such cases. Even though the blood loss may not be as yet excessive, delivery will be accompanied by additional hemorrhage, and therefore no delay in transfusion should be permitted. The administration of morphia and of fluids both intravenously and subcutaneously is of great value in combat-

ing the accompanying shock. Prompt preparations for the control of hemorrhage should be instituted. The patient should be prepared for operation through either the birth canal or the abdomen and all necessary instruments be immediately available. Then and then only should a vaginal examination be done as a means of differential diagnosis as well as to determine the condition of the cervix.

If the bleeding is due to premature separation of the normally implanted placenta or to a low implantation of the placenta, the treatment will depend upon the amount of blood loss. In mild cases simple rupture of the membranes and permitting the amniotic fluid to escape often are sufficient to control the hemorrhage by allowing the placenta to be compressed between the uterus and the body of the child. However such patients should be observed with care, remembering that at any moment the hemorrhage may become serious. If, on the other hand, the bleeding is excessive and continuous or especially if of the concealed type accompanied by intense and continuous pain and board-like consistency of the uterus, cesarean section should be done without delay. In a certain number of instances at the time of operation the uterus will be found to be the seat of the so-called utero-placental apoplexy of Couvelaire. This is recognized by the bluish coppery color and striated muscle fibers by blood. Many such uteri will fail to contract after the contents are removed in spite of all efforts to promote contraction. When this occurs the only recourse is radical removal of the organ if fatal hemorrhage is to be prevented.

If upon vaginal examination the cause of the bleeding is found to be due to placenta praevia the correct treatment will depend upon a number of factors: whether the patient is at home or in the hospital, the area of the internal os that is covered by placenta tissue, the size and viability of the child, and the condition of the mother. Under no circumstances should attempts toward rapid dilatation of the cervix either manually or instrumentally be made. The placenta tissue invades the muscularis of the lower uterine segment and cervix and makes it excessively soft and friable. Attempts at rapid dilatation of the cervix often result in deep tears of the structures with resulting uncontrollable and fatal hemorrhage. The procedure cannot be condemned too vigorously. Oxytoxic drugs likewise and largely for the same reasons, have

no place in the treatment of placenta praevia until after the delivery of the child.

If it is necessary to deliver the patient in the home probably the safest method is by means of bipolar version of Braxton Hicks. In this procedure two fingers are introduced through the cervix, the membranes ruptured, the child turned and one foot only brought through the cervix and out of the vagina. The buttocks act as an effective tampon compressing the separated placenta against the cervix and thus controlling the hemorrhage. No attempt is made to deliver the child until the cervix is fully dilated. There is no reason why the rubber balloon of the Vorhees type or the Willett forceps cannot be used in the home except that rarely are they available when needed. They can be introduced easily and, if necessary, without anesthesia, effectively control the hemorrhage, and result in more living children than does the bipolar version of Braxton Hicks.

There still remains a great diversity of opinion as to the correct treatment of placenta praevia. The difference in general lies between the choice of the delivery through the birth canal and cesarean section. Time does not permit adequate presentation of the arguments on both sides of the question. It seems to me that the decision largely rests upon the condition of both mother and child when first admitted to the hospital. Undoubtedly routine cesarean section in cases of placenta praevia results in more living children and theoretically this should also be true for the mothers. In actual practice this is often far from true. It must be remembered that cesarean section is a major operative procedure, attended by shock and blood loss and possessing a not insignificant mortality due to the operation itself. Many patients are admitted to the hospital profoundly anemic and in shock from loss of blood, already infected from careless vaginal examinations and pack-

ing. In most such cases the baby is already dead or else in such poor condition that there is little or no hope of delivering a living child. Such patients can rarely survive the additional shock of cesarean section. On the other hand, the bag or Willett forceps can be inserted quickly and with little added shock to the patient. When used correctly they provide effective means of slowly and safely dilating the cervix. With the use of either instrument one should make certain that the membranes are ruptured. While the bag still has many advocates, my personal preference is for the Willett forceps. Its application is more simple and usually with less trauma to the patient. Certainly in the case of placenta praevia at near term, with the mother and child in good condition and especially if there is little dilatation of the cervix, cesarean section is the operation of choice.

In conclusion, it should be remembered that vaginal bleeding in the last trimester of pregnancy is always of serious import and demands prompt investigation. There is little excuse for treating such a patient in the home. In most instances, the initial hemorrhage is minimal and unless ignored, ample time is allowed for hospitalization of the patient. Immediately upon admission prompt measures to insure adequate quantities of compatible blood should be instituted. While the history, the physical findings, and the soft tissue roentgenography give valuable information, the differential diagnosis between premature separation of the normally implanted placenta and placenta praevia usually is determined by vaginal examination. It cannot be emphasized too strongly, however, that this should never be done until the patient is in the operating room, prepared for operation either through the birth canal or the abdomen, and all necessary methods of combating shock and hemorrhage immediately available.

WHAT ABOUT PRIVACY?

It is proposed to follow the British system, setting up "local administrative boards"—to assure local control.

In Britain, resulting local gossip over family medical records has been bitterly protested by the British Housewives League.

Your medical records under the American system of medicine are the sole business of your doctor and yourself.

Would you wish your medical records placed in the hands of a local committee of your neighbors?

Interference Dissociation Due to Surgical Anaesthesia*

JETSON PERRY TATUM, M.D.†
Meridian, Miss.

CASE REPORT

S. W., a twenty-four-year-old Negro male was admitted to Rush Memorial Hospital to the surgical service of Dr. Leslie V. Rush, on November 9, 1948, for operation for an extremely large adenoma of the thyroid gland. He was referred to the medical service for examination prior to surgery, at which time he was found to be in good physical condition and he was scheduled for surgery the following day. On this examination there was definitely no evidence of any cardiac abnormality.

The following morning this patient was taken to surgery. Induction was with sodium pentothal and was quite uneventful. However, as the patient was getting into the maintenance stage of anaesthesia with ethylene, oxygen, and ether, the anaesthetist noticed a decided irregularity of the pulse. The operation was temporarily deferred for medical consultation. On examination of the patient on the table the pulse rate was 90 and grossly irregular. Blood pressure was 140/90. Auscultation revealed an irregular heart beat with a peculiar rhythm that was not typical of extrasystole, auricular fibrillation or other arrhythmias which might occur during anaesthesia. The surgeon was requested to postpone the operation until an electrocardiogram could be made. The machine was brought to the operating room and a tracing consisting of the three standard limb leads and CF₄ was taken. By this time the patient was no longer under surgical anaesthesia, the irregularity had ceased and the normal rhythm was restored. The patient was returned to bed for a more complete examination.

The electrocardiogram taken in the operating room was perfectly normal. The following day a routine electrocardiogram consisting of three standard limb leads, three unipolar limb leads, six precordial V leads, V₃R and VE was taken. This tracing also was normal.

On November 17, 1948, the patient again was taken to the operating room. This time

preparations were made in advance to take a tracing of standard limb lead two at any time during the anaesthesia or operation. Again surgical anaesthesia was given and the same arrhythmia recurred. A tracing was taken and quickly developed. This tracing revealed that the arrhythmia was caused by an interference dissociation. The operation then proceeded as planned, for the removal of what proved to be a very large fetal adenoma of the thyroid. The procedure was extensive and prolonged, because of the excessive size of the gland. The patient's operative course was smooth and by the time he left the operating table a normal rhythm had been restored.

The same patient was readmitted on January 10, 1949, for repair of a large indirect inguinal hernia. As a matter of interest a lead two tracing was taken during his anaesthesia the following day. The same sequence of events again occurred. The cardiac irregularity began when the surgical stage of anaesthesia was reached and was maintained during the entire operation, and again disappeared when the anaesthesia was lessened. The tracing again showed the presence of an interference dissociation.

COMMENT

Interference dissociation is an interesting, unusual, and harmless cardiac irregularity which is occasionally encountered. It is due to the tendency of the AV node to control automatically the beating of the ventricles. In this situation there are two pacemakers for the heart, the sinus node, and the AV node, each acting independently, the sinus to control the beating of the auricles, the AV node to control the beating of the ventricles. The ventricular rate (See figure I) is approximately 130, while the auricular rate is about 110. This is different from the usual AV nodal rhythm, in that the sinus node is operating to control the auricles. In the usual AV nodal rhythm the AV node controls both the auricles and the ventricles. When both nodes are operating effectively, the node that is operating the fastest controls the ventricular beat, in this instance the AV node. However, in this case in every third or fourth

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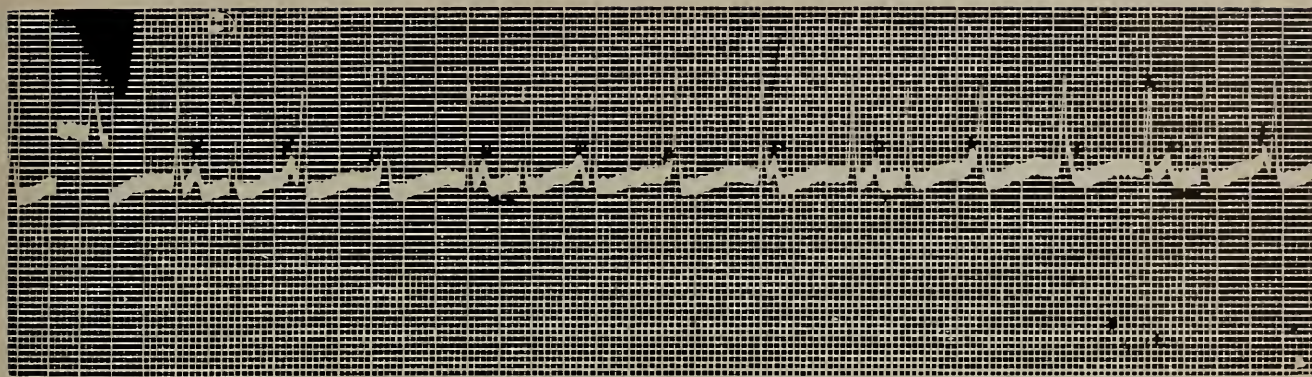


Fig. 1. Lead II. P waves are marked. A line has been drawn under those where the sinus node impulse is conducted to the ventricle.

beat the impulse from the sinus node finds the ventricular path clear and this impulse is continued to the ventricles producing a sinus node beat. This causes the QRS intervals to be close together and produces the irregularity heard in auscultation. It will be noticed that some of the P waves are buried within the QRS complexes which cause these complexes to be different. This mechanism, then, usually called an interference dissociation, is actually an AV nodal tachycardia with the sinus node gaining control every third or fourth beat.

This case is interesting in that it illustrates a type of cardiac arrhythmia that is usually

quite harmless. However, it may be disturbing to the physician until its true nature is known. The case illustrates the necessity for close coöperation between the anaesthetist, the surgeon, and the internist. In this instance the condition was quite harmless and the surgeon was free to accomplish his procedure. A different prognostic picture could have been presented however, had the arrhythmia been a dangerous one, such as ventricular tachycardia.

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IMPRESSIVE OPPOSITION

Who is opposed to the proposed bill to fasten compulsory federal health insurance insurance on the people of the United States?

A complete answer to that would make a book. However, here are a few organizations which have taken a stand in opposition: The General Federation of Women's Clubs, the American Legion, the American Farm Bureau Federation, the American Bar Association, the U. S. Chamber of Commerce, the National Association of Small Business Men, the National Grange, the governors of most of the states, and a number of state legislatures.

Are these groups opposed to higher health standards for the American people? They certainly are not—to the contrary, they are wholeheartedly in favor of making the nation healthier, and in extending medical and hos-

pital care wherever needed. They are, however, convinced that compulsory federal insurance is the worst possible approach to the problem, that it would lead to a deterioration in medical service even as it increased the cost, and that the end result would be socialized medicine. And socialized medicine, as Lenin once said, "is the keystone to the arch of the Socialist State."

Most Americans can buy voluntary prepaid medical insurance at a low monthly cost—about five dollars for a family. The small proportion of our people who cannot afford this can be helped by government without undermining our high medical standards with official red tape. That is why the compulsory insurance scheme has encountered so impressive an opposition.

Traumatic Lesions of the Abdomen*

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THE incidence of traumatic lesions of the abdomen in this mechanical age is ever on the increase and frequently taxes the capacity of a physician in diagnosis and effective therapy. The outcome of traumatic lesions of the abdomen depend on both these things, namely diagnosis and treatment. For brevity and completeness abdominal injuries may be classified as follows: 1) penetrating, 2) non-penetrating, 3) surgical trauma.

The outcome of injuries in the first two categories invariably depends upon the rapidity with which the diagnosis is made and adequate therapy instituted. The third group should be treated by prophylaxis rather than cure.

The anatomy of the abdomen is that of a muscular wall supported by the spine and bounded above by the diaphragm and below by the pelvic floor. The muscular wall is attached to a bony framework. This structure is elastic on three sides and the top, which contains both solid organs and hollow organs, also, many blood vessels are present. The solid organs remain, more or less, constant in size and position. The hollow organs and blood vessels, to some extent, change their size and location and in the presence of distention are more easily injured than when empty.

DIAGNOSIS

In general terms, one may look for pallor and shock of varying degree; blood in the excreta or vomitus; tenderness to pressure; muscle defense; changes in the normal percussion note; increase or decrease in liver dullness; changes in the normal peristalsis; increase in the white blood cell count and decrease in the red blood cell count.

TYPES OF INJURIES AND MANAGEMENT

Penetrating wounds may come from without or within, such as gunshot wounds, stab wounds, or any solid object being forced through the abdominal wall. Solid objects have been forced through the rectum or other

body orifices into the peritoneal cavity. At one time I was called upon to remove a dinner fork from the stomach of a negro woman who had swallowed it. The penetrating wounds from without are usually quickly recognized and treatment may be instituted early. Shock should be combatted with blood plasma or intravenous fluids. While this is being done, the course of the penetrating object is studied and a decision is made as to what organs may be involved. The depth of the penetration and course of a solid object is quite difficult to determine. However, it must be kept in mind that in case of penetration of a hollow organ, patients adequately treated during the first few hours will have a much better chance for recovery. Generally speaking, a wound penetrating the abdominal wall is sufficient evidence for an exploratory laparotomy. I have on a few occasions got by without this procedure however, I do not believe that it is the safest one to follow. X-ray of the abdomen is frequently of value in determining the presence of air in the peritoneal cavity, the course and position of foreign materials, etc. Morphine should not be given until a diagnosis is made and the plan of treatment has been outlined. Perforating wounds from within offer quite a problem because they are not always produced by objects which will show on x-ray. These patients usually present them as an acute abdomen and frequently will not give a history of swallowing a solid object. Theirs is the picture of peritonitis.

Non-penetrating lesions of the abdomen are usually caused by a fall on a blunt object, compression of the abdomen, automobile or airplane wrecks, and occasionally a lick in the abdomen by a blunt object such as a fist. Physical examination, x-ray, and laboratory work should be done as soon as possible. Shock of varying degree should be treated at once and in the presence of hemorrhage or peritoneal irritation, laparotomy as soon as the condition of the patient permits. A ruptured spleen is usually removed. Injuries of the liver can readily be repaired by suturing, and hemorrhage controlled or checked by the use of anticoagulants, fibrin and gelfoam, or similar hemostatic agent. Small lacerations in

*Presented at staff meeting, Charity Hospital, October 26, 1948, Jackson, Miss.

the kidneys may be handled in the same manner.

Lacerations of the stomach and intestinal tract should be closed, unless a resection is required because of the lack of blood supply or mechanical blockage. It has been our policy in the presence of contamination to use sulfanilamide powder in the peritoneal cavity after thoroughly cleansing, and all have been closed without drainage, for the past ten years. Also penicillin intramuscularly and Wangenstein suction and adequate doses of morphine. Streptomycin may be given also.

Injuries to the kidney, unless very extensive, are usually best treated in a conservative manner. Intravenous pyelogram is a very helpful diagnostic acid.

Injuries to the pelvic region often result in rupture of the urinary bladder and this condition should be repaired immediately.

Rupture of the gallbladder is a very rare occurrence and it likewise requires very prompt attention.

Surgical trauma is a condition which may not become apparent immediately following the injury, or may not be severe in character. I believe that there is no doubt that many

patients suffer inconveniences from annoying pains to complete intestinal obstruction as a result of trauma at the time of previous operations. The quality of a surgeon can well be judged by his handling of the tissues during an operation. Abdominal viscera should be packed and handled with wet sponges, not dry sponges, sponge forceps or tissue forceps or other mechanical instruments. Failure to peritonealize tissue is frequently responsible for formation of adhesions which later produce complete intestinal obstructions. It is particularly important to approximate the edges of a peritoneum when closing abdominal incisions to prevent adhesions to this site.

CONCLUSION

1. Traumatic lesions of the abdomen are occurring with increasing frequency.
2. A simple classification and outline of treatment has been given.
3. An occasional case may be seen which can be treated conservatively. However, if any doubt exists, the abdomen should be explored, since a delay in opening may mean the loss of a life.

Responsibility of a Medical School for Medical Service in an Area*

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FOR many years it has seemed to me that a medical school should assume a more active interest in the medical service which the public receives in a geographical area for which the school feels a responsibility. This point of view in no way reflects upon the kind of medical service which might already be available in the area, but I am sure many physicians who are not in close proximity to medical centers do find difficulty in giving adequate medical service to their patients because of many deficiencies in local facilities. You no doubt have heard of the Bingham Associates an organization which is assisting

in distributing medical services heretofore unavailable throughout parts of the New England States under the aegis of the Tufts University Medical School. Mr. William Bingham became interested in this problem when he was told by his own physician in a small town in Maine of the handicaps under which many rural physicians had to work. This physician told him that since he had graduated from medical school and had begun to practice in a rural area that he had been practically cut off from the meetings of progressive medical societies, hospital staff meetings clinics and medical school teaching, because he was so far distant from a medical center. It was as a result of this discussion which Mr. Bingham had with Dr. George Farnsworth that he became interested in subsidizing a program for extend-

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ing certain medical services to assist physicians in areas where such facilities were not provided locally.

Of course, there is no question but that a medical school should continue to assume some responsibility for the welfare of its graduates or for those physicians who may practice in the community not too far distant from a medical school.

There are facilities in medical schools in the way of diagnostic procedures, library, clinics and other consultation services which could and should be available to all of the physicians in the area if a program were properly organized. For many years a number of medical schools in the country have endeavored to give postgraduate courses for physicians in their areas, both by intra-mural programs as well as by way of extension courses, with which most of you have had considerable experience and I would hope, have benefited. Although none of these courses of short duration are ideal, still, they should give some stimulation to the men who attend them. The major endeavor of any such program is the continued education of the physicians who are ultimately responsible for the kind of medical service rendered in their communities.

The library facilities of a medical school should be of inestimable value to the practicing physicians in the area. Unfortunately, I am afraid too few physicians take advantage of this opportunity, and even though many medical libraries do have an extension service, which will allow physicians to send for books and journals, this service is not used as extensively as it should be. As I have mentioned many times before, county medical societies could be of assistance to their own members if, instead of having routine medical meetings, many of which are of doubtful value, journal clubs be formed and the medical literature of the past month or two on various subjects could be presented by members of the society. I know of no better way to cover the literature than by this method.

Then, one of the major responsibilities of a medical school is to continue to give opportunities to physicians in the educational field. This, however, will only be successful if there is interest manifested in courses which may be given, either in the field or within the medical school itself. Great improvement could be realized in both kinds of program if physicians who feel the need for some additional training from time to time would re-

quest particular courses that they feel they need.

We rarely get suggestions from physicians for the kind of course they would like to have presented in short or long courses. Furthermore, I would like to see more physicians who have been in practice for several years return to medical centers for a period of weeks or even months to concentrate on a program in some particular field in which they have become interested, such as pediatrics, obstetrics, phases of internal medicine, fractures and the like. Too few of these men are returning at the present time. Within the next few months in at least one department of the school of medicine at Tulane we are planning to have a place available for a general practitioner who may spend several months working in pediatrics. This would not make him a specialist but it should improve the kind of pediatrics he would subsequently practice. This could be done in a number of other departments without difficulty if practicing physicians were willing to spend the time. We would prefer to do this for physicians who live within a reasonable distance of the medicine school because we would like to feel that we are making a contribution to the improvement of medical service in this area.

Besides the assistance which medical schools may give in continued educational facilities for physicians, they also may be of assistance to physicians in the area in other ways. As you no doubt know, the School of Medicine at Tulane has been making for the past seven or eight months a study of medical service facilities in a section of Mississippi in an endeavor to determine just how a particular medical school can be of assistance to physicians in an area, with the ultimate design to improve the general level of medical service to the public. There are many ideas which have been developed in this study which we would like to put into action. The first of these is the implementing of diagnostic facilities in the area which we are studying. For instance, there are no organized laboratories of the hospitals in this area.

This makes every physician who has patients in the hospitals responsible for these ancillary services. It would seem that we might, as a medical school, be able to give some kind of continuous service to these hospitals by having regularly scheduled visits of pathologists from the medical school to the hospitals, possibly on a weekly basis. At the

same time service could be conducted in the other direction, that is, pathological specimens might be sent to the medical school for more immediate diagnosis in the interim. While this would not be entirely satisfactory from the standpoint of the emergency need, still it would help very materially in the everyday conduct of a well-run hospital, and the technicians would be under experienced supervision weekly. The general supervision of laboratories in hospitals, possibly by the biochemist, the pathologist and the bacteriologist of the medical school from time to time, would be of great assistance and would probably stimulate the technicians to do more careful work. As a matter of fact, this group now serves in such an advisory relationship to the Charity Hospital laboratories in New Orleans. The same kind of service could be conducted by the radiologist, who could interpret those films which had not been diagnosed or about which there was some question. Training programs ought to be introduced for technicians, both for the laboratory field and for the radiological field, so that communities which can not support full-time radiologists and pathologists can at least have the services of well-trained technicians who might be under the supervision of consulting radiologists and pathologists from the medical center.

The Public Health Service, with its diagnostic facilities, should be of great assistance to the communities in which they are located. Possibly by the extension of these laboratories, a more universal and readily available service might be given to the physicians of the state. It is possible that a medical school, acting as a consulting agency, might be of help in suggesting ways by which all medical agencies working in harmony in an area could render better medical service. Relationships between physicians and public health departments and the relationship between hospitals and the profession in areas might be materially improved to the ultimate good of the public.

A third way in which a medical school may be of assistance to areas is through a diagnostic service which may be built up both in the local hospital as well as in the medical school as the center. Although this is not a new idea, since it is being used extensively in New England and the Rochester, New York, area, in conjunction with the University of Rochester and in several other places. Still it has not been tried to any extent in this part of the country on a continuing basis. It is our

plan, if the profession in the area desires to have it, to send to the area capable diagnosticians or specialists in their fields, so that they may serve as consultants to physicians, preferably using hospitals within the area as focus points. When these consultants go to the field they will conduct not only a diagnostic service for physicians who care to use them, but, also could conduct clinico-pathological conferences and seminars on various subjects which the staff of the hospital or the medical group in the area might desire to review.

At the same time, if the facilities within the doctors' offices or in clinics or in the hospitals are not sufficient for certain types of cases, it will be possible for the physician to send his patient to the central diagnostic clinic existing within the medical school. The patient would be studied, a report of the findings returned to the physician and he would have complete charge of any therapy which has been recommended. It would also be our plan to attempt to rotate residents in various specialties through certain designated hospitals in the area. This program would be valuable from many points of view. In the first place, a resident who has had several years of training in a specialty, for example internal medicine, general surgery or obstetrics and gynecology, could be of great assistance to a hospital in taking charge of the services on a full-time basis generally, to organize a department in the hospital and to relieve the visiting physicians from these responsibilities. He would, presumably, bring something to the hospital in the way of recent information and techniques which his training has allowed him to obtain. At the same time, he would be getting experience, at the termination of his formal hospital training program. This idea is now being used in Mississippi. The Department of Obstetrics and Gynecology has two or three residents in various hospitals in the southern part of the state. I believe the placing of residents in hospitals is one of the best ways a medical school can serve the profession and the population in general. As the plan develops and the hospital facilities improve and as other hospitals request services, it is our plan to expand this residency program. Later, we would like to have senior students serve as clerks in some of the hospitals, and other students may spend summers in these hospitals as junior interns or clerks. Of course, the medical school would have to

know that the service in which these students were assisting would be well supervised services. Here again I believe the stimulation of an affiliation with a medical school would do much to raise the standard of hospitals and the type of work which was done in them. The medical schools in no way want to take over the hospitals nor do they want to enter into any such relationship if it is not mutually agreeable. However, I can see nothing but a two-way benefit following from such affiliations. I look forward to the time when hospitals in an area surrounding a medical school might be considered a part of a medical school system, as affiliated teaching institutions. Some of the local physicians might become members of the medical school faculty. Up to the present, I have been speaking largely in terms of institutions in areas more isolated from a medical center. However, there is much to be done within an urban area in the way of correlation of services in hospitals, in clinics and other medical services. I might use the specific example of the School of Medicine of Tulane University.

We of course, have an extremely close affiliation with charity hospital and without the two institutions neither of them would be as good as they presently are. The same thing applies to Louisiana State University, which, together with Tulane, is responsible for the conduct of 80 per cent of the medical service at Charity Hospital. There is no question but that the medical school affiliation is of tremendous benefit so far as the standard of service is concerned to the patient. Of course, the medical schools benefit by having the opportunity to give training, both undergraduate and graduate, to their students.

Extending out from this immediate University Hospital, if you will, the services which may be conducted in other urban hospitals are of importance, and I believe a university affiliation makes for a much higher standard of service in a hospital. Recently one or two of the departments in the Medical School have been asked to supervise services in presently non-affiliated hospitals. This, possibly, has been requested because the hospitals realized they could better be assured of approval for training if they had university support. Whatever the motive, if the University can be of assistance in improving medical service by any honorable method, it seems to me it is the obligation of the school to do it. At the same time, the medical school is profiting by

increasing the number of hospitals where its students may receive graduate training.

A medical school should extend its services as far as it can if it has the facilities, and not just to civilian services but to governmental activities as well. As you probably know, there are a number of medical schools in the country which are responsible for the staffing of veterans hospitals. This is one of the finest medical developments which has occurred in the post-war period. The veterans of this war are receiving better service than was ever supervised by medical schools.

I believe the military services made a great mistake in not taking advantage of this opportunity as well. It was largely due to the farsightedness of Dr. Paul Magnusen and other men interested in good medicine for the veterans that the Veterans Administration was able to develop an affiliation with so many medical schools and thereby improve their hospitals immeasurably. If the three military services could possibly agree to combine their services and establish hospital centers near existing medical school centers, much of the problem of the care of the military people in the continental United States would be taken care of and there would be little need for threatening a draft of doctors. However, this is possibly a suggestion for the military services to take advantage of.

In the past fifteen or twenty years, I have had a great interest in the methodology of medical care throughout the country, particularly in the non-urban areas. I have become very much disturbed at the lack of understanding between organized medicine and public health. I have become convinced over these years that public health units have not only *not* made any encroachment upon the private practice of medicine, but have actually increased the private practice of medicine in most areas. A few years ago we were able to establish a Department of Public Health and Tropical Medicine School, and it has been my hope that we might be able to train a good many men to go into public health work in this part of the country. I believe a medical school could do much through its training of public health officers and of its own medical students to allay any fear that the organized public health does encroach upon private and public health officials. Physicians should look upon the Public Health Service as an ancillary service, and should take advantage of its facilities such as its laboratories, and other

diagnostic procedures, which are conducted by the Public Health Service for the benefit not only of the physician but of the public, which is the important consideration. The Department of Public Health and Tropical Medicine at Tulane is having an institute to which it will invite the public health officers in this area of the South. It is my hope that at this meeting considerations will be given to ways by which public health can actually assist private medicine in doing the job of caring for all classes of people in a community. Possibly

the medical schools can be of assistance in working out relationships of this kind, not only between the medical profession and public health, but between hospitals and the profession, between other ancillary agencies, such as laboratories, social service groups and voluntary agencies. Our interest in the development of medical services of this kind of an area comes, in the last analysis from our desire to render better medical service to the public.

Suggested Program for Better Distribution of Medical Service to the Public*

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IN the past there has been very little thought given on a national or state-wide basis to the distribution of medical service within a designated area, so far as placement of doctors is concerned. Physicians generally have practiced where they felt it would be possible to make a living, and where they and their families would probably like to live. Much the same unplanned development has taken place in regard to ancillary medical services. The poor development of roads has prevented very wide transportation of patients or physicians, so that as a consequence the area in which a single physician practiced in many instances was fairly well circumscribed. In a post-graduate extension program which was conducted in Mississippi a number of years ago it was soon found that one could not organize groups of physicians on the basis of county alone, since parts of many counties were not accessible to other parts, and actually physicians from one part of a single county could not easily get to another part. However, no doubt, in the early days the county seat was the center of a population, from which the whole county could be served by a physician or physicians. This situation has changed materially, and in the future it will be necessary to plan for the distribution of medical service on a trade area basis, rather than political (county) units. There is no question but that the medical profession itself, within

the individual state, will have to do some very definite planning regarding the distribution of medical service. In the state of Mississippi, as well as in many other states, the hospital program which is developing under the Hill-Burton Bill will do much to encourage physicians to settle where these hospitals are, since it is logical that the physician would want to practice where he might have proper facilities for diagnosis and treatment.

Planning for such a distribution of medical service must be watched carefully lest there be influences brought to bear which would change the logical and normal distribution of medical service and facilities. The example of the Veterans Administration might be used, in that there has been an attempt in recent years to distribute the Veterans Administration hospitals on the basis of medical centers, where medical service could be obtained from existing institutions, particularly medical schools. On the other hand, there has been considerable pressure brought to bear on the Veterans Administration to have hospitals built in isolated areas of the country, where it is difficult to interest physicians in spending their full time in these hospitals which are not convenient to medical centers. In many instances it would appear that some of these Veterans Administration hospitals have been built as monuments to their legislative sponsors.

It is not easy, even though trade areas in states have been pretty well worked out by the Bureau of Medical Economic Research of

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the American Medical Association, to supply all of the facilities necessary to take care of the patients in an area. I do believe, however, it is the responsibility of the organized medical profession to make as great an effort as possible to see that medical service is distributed on some equitable basis. I see no other way by which governmentally planned distribution can be avoided. The effort to develop primary and secondary medical centers in the state by determining where the greatest concentrations of population are, is a very definite step forward in the attempt to decide where there should be a concentration of physicians and medical facilities.

There is no question but that the physician practicing by himself in a relatively isolated community never has had and will never be able to have all of the facilities he needs to carry on a superior practice if he has to buy them himself. There is some doubt in the mind of many people as to whether a physician should be expected to practice by himself because he has no one with whom to consult and, above all, no one to relieve him when it becomes necessary for him to leave the area for one reason or another, illness, medical meetings or vacation. The idea of physicians combining facilities seems to me an extremely sensible approach to giving good medical service to the patient with a minimum outlay in investment to the physician. Rather than have several physicians in a community duplicating x-ray equipment, laboratory equipment and other essential equipment, if the physicians would combine to have such common facilities it would be a great saving in facilities, overhead and upkeep. It is not essential that the physicians in any way be organized as a group, but simply combining to provide essential facilities for the practice of good medicine in this day and time. Obviously, group practice is a way by which medical service can be better distributed, and probably more economically, both to physicians and patients.

As improvement in transportation has taken place, it has become less essential for physicians to be as isolated from each other as they have been in the past. This may sound as though there were desire on my part to recommend that there be no country practitioners. I am rather convinced that we are using a false or undesirable title for the physician who practices in a non-urban area. Is there actually any difference between country

practice and urban practice so far as the relationship of the doctor to the patient is concerned? It is really a matter of having facilities, and if they can be provided in a small community there is no reason why just as good medicine should not be practiced as is practiced in the cities.

Nearly every week we receive requests from communities in different parts of the South, asking that we attempt to find a physician for an area. It would seem to me that rather than writing to a medical school, the State Medical Society and the State Hospital Association should combine efforts to determine, first of all, the need for a physician in areas. If there is a definite need, then these organizations could assist in finding a physician, but, first of all, these agencies could determine, also, if there were sufficient facilities available locally to interest a physician in coming to the area. This plan would give the public the idea that the profession is seriously and honestly interested in trying to provide medical service for the particular area needing a physician. In many instances I have investigated the requests which have come to me, and it has been found in most instances that medical service could be obtained within a relatively short distance from the community asking for a physician, and probably there was not a great need for a physician in the relatively sparsely populated area which had requested service of a physician.

With the development of the hospital program, and I will speak specifically of the Mississippi hospital program, that should give a pretty good idea of the population distribution within a state, and should determine where the greatest number of physicians are needed. There is no question but that it is a difficult problem to have physicians eagerly desire to go to areas where the public thinks there is need for physicians, unless the conditions seem to appeal to the physician, or unless the facilities are available for the kind of practice that he wants to conduct. However, I do believe the Medical Society in a state, particularly, or perhaps, combined regional societies in an area of the United States, should give serious thought to some kind of plan that will encourage physicians to go to the areas where they are needed, and to encourage the public to make some kind of an effort to provide facilities for the physician who might cast his lot with a community.

For a great many years, throughout the South particularly, and, to a lesser extent, in other parts of the country, there has been an effort on the part of business people to encourage the development of industry in areas. Tax free land has been offered in many instances, factory buildings have been constructed so that there might be improved economic conditions in the community. It has been extremely rare for one to hear that a community is interested in providing facilities to encourage a doctor to settle in that community. The providing of medical service in an area is not just the obligation of physicians, but should be a cooperative effort on the part of both the profession and the public to have personnel and facilities to render medical service. Again, if bureaucratic control is to be avoided, it seems to me that a plan must be worked out whereby the physician can render the kind of service that the community needs and the community has a responsibility in trying to make facilities available for the physician.

It has been suggested that the medical schools in the country could logically play an important role in the distribution of medical service in the area for which it feels a responsibility. Indeed, in several parts of the country medical schools are exerting a serious effort to make contributions in the way of improving and distributing medical service in areas surrounding the location of the medical school. Certainly a medical school has no interest in going into the general practice of medicine, and, above all, it has no interest in being the bureau which might control distribution and quantity of medical service in an area, but it would like to see that medical service is given to every body in a manner as effective and economical as possible. It should, also, want to contribute to the quality of service. A medical school could only be of assistance in a relatively large area if the entire medical profession in that area were interested in using whatever facilities it might be able to provide. This plan would have to be worked out in individual areas by a school and the profession. Some effort is being made to develop such a plan, as you possibly know, in Mississippi, between the physicians and medical institutions in an area of this state and the Tulane University School of Medicine. Specifically, it has been found in a small area of the state that two of the greatest needs for the better practice of medicine and better

medical service in communities are the provision for more laboratory and x-ray service. It has been suggested that these two services could be, at least, augmented by medical schools, first of all, by training technicians who would be competent to carry on much of the preparation of the work in these two medical fields; and, then, to provide a consultation service on a regular weekly or semi-monthly basis for institutions where these services do not have trained professional people in the fields of radiology and clinical laboratory work.

I believe this is a timely discussion in that as the hospital program in Mississippi develops, it may be rather difficult to provide pathologists, chemists and roentgenologists to staff many of the hospitals which are being built, and it is possible that medical schools nearby may be able to provide much of this service, as has been done to a certain extent in this state and others in the past.

Further, the medical school may be able to assist the physicians in having cases referred to a diagnostic clinic in the medical school for diagnosis and recommendations for treatment when facilities locally can not provide these services.

Of course, one of the advantages of such a relationship might be to continue post-graduate education by having a very close relationship between the medical profession in an area and the medical school which is providing facilities and educational opportunities for the practicing physician.

One of the greatest needs in the hospital program in many states is the need for house staff, that is, either interns or residents, or both, to reside in the hospital and to give assistance to the physicians and immediate service to patients, in both the in and out-patient services. There are at the present time many more internships and residencies in the hospitals of this country than there are available young medical graduates to fill them. As a consequence, it is necessary, I think, to combine efforts in an attempt to give service to some hospitals which are unable to obtain the services of residents and interns because they can not provide all of the training required for the educational development of the intern or resident. This can be done by developing a program of relationship between a medical school teaching center and hospitals in an area. At the present time plans are under way to provide residents in a number

of the hospitals of Louisiana and Mississippi from the resident staff at the Charity Hospital. This will be done by having residents needing a year or more to complete their training spend that time in one of the hospitals needing such resident service. This is an excellent cooperative effort, in that it gives an opportunity to the trainee to receive further training; it improves the service in the hospital because there is a physician in residence in the hospital at all times; and, thereby, one would expect the quality of medical service which is provided in the hospital to be improved. The resident might do much to bring new ideas and techniques to the staff, and should be of great assistance to the visiting staff, relieving them of much work.

For some time there has been a discussion in some medical groups regarding the distribution of medical service by having the medical school encourage physicians who have finished one-year internships to practice in certain areas. This intern would spend a year in a selected community where a physician is needed, and that need has been definitely determined by the organized medical societies, with the understanding that if he does not desire to stay on in the community, the medical training center has an obligation to give him further training in his chosen specialty at the end of the year.

This would do two things—first, it would distribute medical service much better than it is distributed at the present time. The young physician would not feel that he was unduly discriminated against by having to practice before going on to specialized work, because he would have an opportunity to go back to the training center for further work and, third, in many instances he would find the practice so much to his liking in the area that he might stay on, as has happened in a number of instances in other medical centers.

Although it may be an ideal concept, I would like to think of the medical school as having continued influence on its graduates, and as being a continuous support to its graduates, or to the physician who is practicing in the area of a school from which he did not graduate. I believe that a medical school to the extent of its resources does have a definite responsibility to assist in developing their practices and in continuing their efforts to obtain instruction. The faculties of the medical school should function in a consulting capacity with physicians, if

requested, so that, generally, the profession in an area might feel that it were an integral part of the University system.

There is nothing particularly new in this presentation regarding the distribution of medical service. Possibly I have pointed out a few ways by which it could be done more effectively than it has been done in the past. However, I do feel that we can not stress too much the responsibility the medical profession has to see that medical service is made available to the public. There has been a feeling in the past that if the public wanted medical service it could get it. I believe that we have got to show the public that they do need medical service and that the profession can provide it for them, and that it must be a cooperative effort. We can not sit passively by and say that the present medical situation is satisfactory and that we want no changes at all. We do know that we must have a positive and effective program for universal medical service if we want the present profession-lay relationship to continue.

In conclusion, then, I would recommend that, if it has not already been done:

- (1) State Medical Societies determine by careful survey the natural population and trade areas as they exist in the states;
- (2) that facilities for medical services within these areas be recommended;
- (3) that an effort be made to provide the physical and ancillary facilities which are needed to give medical service in that area;
- (4) that, thereby, it should not be difficult to stimulate physicians to go into those areas if conditions are favorable for the effective practice of medicine;
- (5) that the medical schools of the country can be of great help to the profession by distributing certain medical services by
 - (a) providing some services in the areas on a part-time basis which are not available locally, particularly laboratory and radiological services;
 - (b) the provision of other consultation services when necessary;
 - (c) the staffing of hospitals with resident physicians for periods of time;

- (d) by the placing of physicians who have just completed their internships at university hospitals, in areas where physicians are definitely needed, with the understanding that if they desire to leave at the end of a year or two the medical center will be responsible for providing continued training;
- (e) medical students should be given an opportunity to work with physicians in the smaller areas in the summertime to determine for themselves what kind of practice they would enter were they to go into a small community. The Public Health Service

in Mississippi has been doing this kind of training for a number of years, and I believe it has been effective in getting many men to go into the Public Health Service because of this early exposure to the public health work.

Again, may I reiterate that the medical profession **must** make some such plans and work for the provision of medical service for everyone. I believe the profession can do it by means which have been recommended here and elsewhere, and, above all, without the necessity for having a bureaucracy determine the means by which universal medical service is to be given.

The Nimble Years*

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ANNIVERSARIES are highly significant. They are joyous occasions when they mark definite forward steps in progress; they could be equally sad if they were simply another in a procession of days and years with nothing much accomplished. Mississippi can truly look back on the past quarter of a century with deep satisfaction and gratitude for her gains along all lines—gains that have brought her to a state of prosperity and well-being once undreamed of.

Twenty-five years ago this month I came to the State Board of Health as executive officer, so July is a most interesting anniversary for me. Twenty-five years may seem a long time, but those years have been so full and have gone so nimbly that I cannot think of them as only a certain period. These years are jewels of many colors and many meanings—far more precious than any collection of rare gems, for they sparkle with life itself, with the inspiration of the high courage and undaunted persistence of our people as they worked toward a better, more abundant life for themselves and their children.

In reviewing briefly some of the things that have come to pass during this time, I hope you will bear in mind the close partnership that has existed between the citizens of Mississippi and those who have served them in an official capacity. I have leaned heavily upon other people—not only upon the private physicians, the dentists, the public health workers, the state officials, the press, the radio stations and all the agencies that have cooperated so whole heartedly, but upon thousands of individuals, the good friends of the state board of health. Therefore any and all mention of our improvement is a family affair—the concern of everybody, the achievement of all members working together.

Twenty-five years ago there were only eight full-time county health departments. Today there are only three unorganized counties—that is, only three counties are without full-time public health programs to provide the various health services the people need. We plan definitely to have all 82 counties organized and going by January 1, 1950. That so many health departments have been established and maintained is proof of their value to the people in their communities.

When I took up my new duties the disease picture was altogether different from what it

*Written in token of the August 8, 1949, celebration, twenty-fifth milestone of service rendered by Dr. Underwood as executive secretary of the Mississippi State Board of Health.

is today. Tuberculosis, for instance, killed nearly two thousand people that year, and more than thirty-five hundred cases of it were reported—doubtless there were even more cases not reported. Today four mobile units, completely equipped, blanket the state in an intensive case-finding program offering free x-rays, so that anyone, either through this service or his local health department, need not let tuberculosis slip up on him. Last year, instead of nearly two thousand, only 688 lives were lost because of this disease.

Typhoid fever was another field marshal in the forces of death. That year nearly 2,500 cases of it kept the doctors busy, and in spite of all they could do 330 people died of it. Now the disease has reached an all-time low—practically the vanishing point—with only one death last year. With effective and proved immunizations available, there's no need for anyone to have typhoid fever, and most Mississippians no longer have to be urged to keep their immunizations up to date.

Then there was another preventable disease—diphtheria—that used to be reported by the hundreds, and take the lives of dozens of children annually. With the increasing use of diphtheria toxin-antitoxin by physicians and health officials throughout the state, and the growing awareness of parents as to the importance of immunizations, this disease has now been reduced to seventeen deaths last year. Not one of those cases would have occurred if those children had been protected against diphtheria, for the effectiveness of immunizations is practically 100 per cent.

Here's another striking change—in that same year 711 cases of smallpox occurred, and six people died of this disease. Today smallpox has vanished from our public health problems; the occasional cases that do appear are always because the victims became negligent about their vaccinations.

With the discovery of tetanus toxoid in 1924, tetanus became a preventable disease. Since tetanus germs are almost always present in soil contaminated by body wastes of cattle, horses and other animals, this discovery is a boon especially to children, farmers, gardeners and others whose activities bring them into contact with such soil.

Within recent years Mississippi has experienced a dramatic reduction in syphilis—50 per cent. This focused the eyes of the nation on our venereal disease control program.

Pellagra, a nutritional deficiency disease, is something we don't hear much about any more. But in 1924 nearly six thousand people suffered and were debilitated because of it, and 413 died of it. Plain starvation, you might call it, in this land of plenty. Now, thanks to the splendid work of Dr. Joseph Goldberger, much of which was done right in Parchman, the world knows what causes pellagra and what to do about it. Thanks also to the rapid advances in the science of nutrition and to the untiring efforts of physicians, public health workers and those who specialize in the field of nutrition, people now know much more about what kinds and quantities of foods to eat. Recent surveys show that our people are eating better than they ever did—that they understand food values and are practicing better eating habits.

And now, look back at the Big Bad Wolf of all our Mississippi diseases, that monster malaria. The year before I came to the state board of health 95,222 cases of it were reported! Although the next year showed a slight decline, 365 people died of it. I'm not at all sure that we actually did ever have all that malaria—it is quite possible that many cases of illness with obscure or conflicting symptoms were called malaria, illnesses that with modern methods of diagnosis, laboratory tests and greater knowledge would have been found to be something not even kin to malaria. Now it is almost impossible to find a case of the disease—the board of health even offers a small sum to physicians who send in a blood specimen that laboratory tests prove to be real malaria. The few cases reported in recent years were nearly all brought in from other places, most of them by veterans returning from malarious regions overseas.

We could go on down the list of diseases that used to kill thousands and incapacitate more thousands, and find comparable reductions. You would not remember all the statistics, and I certainly would not take the time to mention them. I want only to remind you of the thousands of babies and mothers we once lost needlessly, of the children who died of preventable diseases and of the older people who are now enjoying better health than they formerly would have, and rejoice with you that this change has come about.

The modern trend is toward what might be called constructive health—that is, toward emphasizing and enhancing the positive aspects of health, not merely the absence of disease.

This must be done largely through education, with demonstration and proof going along as far as possible with more widespread health education. With so many of the so-called childhood diseases conquered and the consequent lengthening of the life span, we now have an aging and older population. This calls for a change of emphasis, and we must now turn more of our attention to improving the health of adults and to preventing the toll of degenerative diseases in later years, to reducing the ravages of chronic diseases such as heart disease and cancer. All these millions of people who are living longer must be helped to keep well, active, strong and able to enjoy their added years.

In the field of mental health we have an enormous problem, one that calls for serious, concerted effort. Under present conditions we do not have enough facilities to care for the seriously ill, much less those whose mental illness is just beginning and might be easily cured. Our goal should be to improve the mental health of our citizens so that fewer persons will break down and need clinic or expensive hospital care. It is possible to guard and improve the mental and emotional health of a child through constructive advice by qualified physicians, and to help him reach well balanced maturity, an asset to his community and to his state.

All this may sound like an impossible undertaking. But 25 years ago much of what is now taken for granted would have been considered sheer fantasy. Who could have foreseen the discovery of the sulfa drugs, penicillin, streptomycin, DDT and other life-saving measures? How dare we think that newer, better measures will not be found? Or that it will not be possible to provide the benefits of such improved measures and services to all our people?

In this past quarter of a century, Mississippi has not only witnessed a great and gratifying reduction in many diseases and in the death rates from preventable diseases, our state has put herself out in front along other health lines. We were the first in the nation to complete a required survey and start con-

struction of modern hospitals under the Hill-Burton Act. This is planned to provide well-equipped and well-staffed hospitals within easy reach of everyone. We were also the first state to provide, through legislative appropriation, funds for the medical education of young men and women who will return to Mississippi to practice. This will greatly relieve the doctor shortage.

Unquestionably, Mississippi has moved out of the "poor relation" category of states. We are prosperous, and moving forward toward greater prosperity and economic upswings. Many industries have located here, and more are coming. As our people have prospered and have grown increasingly conscious of their need for better health services, they have realized that better health is purchasable—and they have worked steadily to meet their needs.

No one could stand at this twenty-five-year milestone, look back on all that has taken place, and consider our present situation, without looking to the future. It is a vantage point in public health we have reached by utilizing a growing body of knowledge in environmental sanitation, in communicable disease control, in public health laboratory procedures, in preventive medicine, and in putting all this into practice in our public health programs.

From this vantage point we Mississippians can see some of the problems ahead of us. While they are not so sharply defined as those we have already solved, it is possible to estimate some of them and to plan, to some extent, our methods of procedure for the coming years.

Everything that you, my friends and the friends of the state board of health, have accomplished has been done through that close partnership I mentioned a few minutes ago. It must be a tremendous satisfaction to you, as it is to me, to view the progress made possible through such team-work, and to look with boundless confidence at the future.

For all gains already made, and for those we know we will make, I would like to say "Come, and let us rejoice together."

The Treatment of Heart Failure*

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THIS subject has engaged the attention of the medical profession so long that its discussion before a medical assembly seems rather commonplace. However, because of the rapidly increasing toll charged to heart diseases, it behooves us of the medical profession to think more often and more seriously about this subject. For twenty-five years heart diseases have been the leading cause of death and in 1946 one out of every three recorded deaths was due to organic heart disease.

In recent years a number of factories have combined to elevate cardiac diseases to the number one spot as a cause of death. It is a comforting thought to us when we think of the many dreaded diseases as diphtheria, typhoid fever, malaria, pneumonia, tuberculosis, puerperal sepsis, etc., which, though not entirely whipped, have been greatly subdued by modern medicine. The death toll in many of these diseases has now become negligible. This may be the reason that life expectancy has been increased from 49.5 years in 1900 to 67 years in 1945. This also is a comforting thought to us to know that life expectancy has been extended to the ripe old age of 67 into an age when cardiac diseases would naturally be more prevalent as a cause of death. On the other hand we must not ignore the charge of a large group of the medical profession as well as laymen who believe much of our cardiac troubles due to the pressure of modern business, so called "fast living," or dissipation of the twentieth century.

A portion of every discussion of treatment is given to prevention and there is certainly much to be done for the prevention of heart diseases. Herein, no doubt, is our greatest hope of reducing the ever-increasing cardiac mortality rate. The evils of dissipation, drinking, smoking, poor eating habits, faulty diets, inadequate rest, nervous tension, overwork, to mention only a few of our sins, certainly do not tend toward longevity.

We may disagree as to cause but our conceptions, our definitions of heart failure are fundamentally the same. The term defines itself. Dr. Sol Bloom says, "Heart failure may

be defined as a state in which the heart is unable to maintain a circulation sufficient to meet the metabolic demands of the body." Thus, we may have a normal heart failing because of persistent excessive demands or, secondly, we may have a heart with organic disease which is unable to meet only the normal demands.

A failing normal heart may be due to respiratory infections, any chronic illness, bronchial asthma, anemia, thyrotoxicosis, unusual persistent exertion, or obesity. The chief difficulty in this group is that of diagnosis. Once the diagnosis is established, and if the condition making increased metabolic demands is remedial, there will be improvement in the cardiac condition.

This second group, which includes failures due to a diseased heart, may also present a very difficult diagnostic problem. Just recently we were unable to explain a right upper quadrant pain in an elderly negro man only to see him two days later with a fully developed cardiac failure. Moist rales in the lung bases may not be recognized at first as a beginning pulmonary edema. But once the diagnosis of heart failure due to organic disease is established, the treatment is essentially the same. Briefly it may be outlined as rest, digitalis, oxygen therapy, diet, diuresis, and psychotherapy.

In severe heart failure the metabolic demands of the body must be reduced to a minimum. Absolute bed rest is most essential. However, do not demand of your patient that he lie flat in bed. When there is considerable edema of the lower extremities, by placing your patient flat in bed, this fluid will be rapidly drained into the general circulation, increase venous pressure, and cause a rapidly developing pulmonary edema. Your patient should be allowed to assume a reclining position most comfortable to him which will usually be semi-sitting position. This position can be most comfortably maintained with a hospital bed but may be obtained by use of pillows or by placing blocks under the head of the bed. Insist on your patient using urinal and bedpan but if their use is too cumbersome, causing too much exertion and dis-

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pleasure, compromise by permitting the use of a portable bedside commode chair. Allow no disturbances with patient's rest. Visitors should be restricted but an occasional visit from a close friend may be helpful for the patient's morale.

Adequate rest and sleep in severe heart failure is rarely obtained without sedatives or hypnotics. Certainly in the first few days of treatment, morphine-pantopon, or dilaudid in adequate doses, are our most valuable sedatives. Particularly in cases with acute pulmonary edema morphine facilitates breathing, relaxes the patient, relieves anxiety, and induces sleep. It is more effective when combined with atropine. However, atropine should not be used in patients fully digitalized who have a rapid pulse. Its use will block out the slow-effect of the vagus nerve on the heart. Morphine, or its derivatives, should be given at first by hypodermic, but, as the patient improves, it may be given by mouth. After a few days, barbiturates will probably provide adequate rest and sleep.

A pattern for rest in patients with less severe heart failure is the same as with severe failures except probably a little less drastic. He may be permitted, at your discretion, more liberties with diet, visitors, bathroom privileges, etc. These liberties should be allowed with caution that patient will heed the danger signs of recurrent failure, i. e., precordial pain, undue weakness, dyspnea, or palpitation. Recently one of our cardiac patients of long-standing engaged himself in a forty-eight-hour session of poker playing. There was a rapid recurrence of cardiac failure of grave proportions; though, to appease his own conscience and his wife's temper, he feigned a feeling of well being. One week later he was found dead in his bathroom.

How long a patient must be kept in bed depends on how well he has responded to treatment. Some doctors say keep the patient in bed until all signs and symptoms of heart failure have subsided and a regular pulse of eighty or less has been maintained for at least a week. We say bedrest until maximum therapeutic effect has been maintained for at least a week. Some patients cannot be relieved of all signs and symptoms of heart failure and should not be doomed to bedrest for life. Getting the patient out of bed should be done very gradually and by a definite plan increasing so many minutes each sitting. In elderly cardiac patients we never allow them to stay

in bed many days after they are digitalized. They weaken rapidly, quit eating, give up, and soon become bedridden. The general condition of all patients must be watched, but more especially that of the elderly patient.

For 150 years or longer digitalis has been the drug of choice in treating heart failure and is today our most essential drug in treating this condition. It is indicated in every case of cardiac failure. Your choice of a particular digitals preparation and your method of administering it is the best drug and method for you to use. This we feel is true because you know your preparation and method best. It is most essential to be thoroughly familiar with the preparation you are using—its dosage, action, and by all means its toxic manifestations. Since the patient will be under treatment for the remainder of his life, he, too, should be familiar with signs of underdosage or overdosage.

In patients who have had no digitalis therapy during the past month we digitalize them by giving 1.2 mg. of digitoxin to all adult patients under 150 pounds and 1.6 mg. to all over 150 pounds. Our usual dosage is .4 mg. every four hours for three or four doses depending on the size of patient. It may be given by mouth or parenterally but always by mouth if possible. Digitoxin is preferred in the early stages of treatment because of its quick action and it is better tolerated than other preparations. However, it is a dangerous drug unless used cautiously. For this reason only the digitalizing dose should be left with patient on your first visit thus avoiding overdosage. On your visit the following day that patient is fully digitalized and a maintenance dose is prescribed, which is .1 mg. digitoxin daily for patients under 150 pounds and .2 mg. for patients over 150 pounds. About the tenth day of treatment when the patient's condition has improved and an appetite is returning, digitoxin is discontinued and a maintenance dose of .1 gm. daily of the whole leaf digitalis is given. The whole leaf preparation is slower acting, a safer drug, and your patient can more easily recognize its toxic manifestations.

If a patient has received digitalis therapy in the past two or three weeks, digitoxin should not be used. Divided doses of .3 gm. whole leaf digitalis daily will be much safer in this type patient. This amount should be continued until full therapeutic effect is reached but always being alert for toxic manifestations.

For very rapid action the use of strophanthin or ouabain may be indicated in very rare cases, but, with the rapid acting digitoxins, we have never felt the need for their use. Strophanthin and ouabain act promptly, have the same indications for use as digitalis but must be used wisely and cautiously. Patients must not have had previous digitalis. The drugs are given only intravenously, initial dose may be .5 mg. followed at intervals of two hours with 1. mg. and total dosage not to exceed 1 mg. It should be diluted with 10 cc. of glucose and given very slowly into the vein. Since these drugs are eliminated so rapidly from the body, maintenance doses of digitalis preparations may be started immediately.

When the oxygen content of arterial blood is lowered to a point of marked cyanosis, the patient is dyspneic, nervous, restless, and usually very anxious. Oxygen therapy in these patients is most helpful. It might be well for you to know who does acetylene welding in your community. We once gave oxygen to a patient with acute pulmonary edema by slipping a catheter over the tip of an acetylene torch and giving nasal oxygen in this manner until a more suitable apparatus could be found. Dry oxygen is irritating to the nasal mucosa and may cause ulceration of the mucosa if used in this manner too long, but, as Dr. Mayo would say, the patient must live to have ulcers.

A restricted diet is very essential in handling these patients with cardiac failure. One has only to recall the cases of "acute indigestion" of other acute cardiac episodes following large meals to know the unusual demands made of the heart by our digestive organs. Karell's diet of one half pint of whole milk four times daily or a modification of this diet is excellent in the early days of treatment. Whatever diet is used should be low in bulk, calories, protein, and sodium. In obese patients, a low caloric diet should be continued until all excess normal weight has been lost. A diet low in sodium will facilitate the elimination of edema and allow more freedom of fluid intake. When a restricted diet is to be maintained over a long period of time, one must watch his patient for anemia, vitamin deficiencies or other signs of malnutrition.

If digitalis is our most essential drug in the treatment of cardiac failure then mercurial diuretics are certainly our second most essential drugs. They act by greatly reducing the reabsorptive power of the convoluted

tubules of the kidneys. Mercurial diuretics should be combined with theophylline, a drug which greatly increases glomerular filtration. We use a salyrgan-theophylline preparation giving 1 cc. as an initial dose to test for sensitivity to the preparation. The patient is given repeated doses for 1 cc. or 2 cc. at two-to five-day intervals depending on the urgency for diuresis. In emergencies salyrgan-theophylline may be given intravenously but is more safely given into the muscle. If diuresis is not adequate, it may be greatly increased by giving 90 grains of ammonium chloride daily for two or three days prior to the mercurial diuretic.

If the patient is found to have acute nephritis or advanced chronic diffuse nephritis, mercurial diuretics should not be used. However, it should be remembered that the urinalysis of a patient with severe cardiac failure and considerable edema may closely resemble that of either acute or chronic nephritis. The presence of albumin and casts in the urine is not necessarily a contraindication to the use of a mercurial diuretic. Start your patient on small doses to watch for acute toxic reactions. As you are promoting diuresis watch your patient for dehydration, chloride depletion, hypersensitiveness to mercury, or allergic reactions. In patients fully digitalized, as the fluid is rapidly withdrawn from body tissues the digitalis contained in this excess body fluid may become rapidly mobilized and your patient will become over digitalized. If your patient is closely observed for toxic reactions you will be able to give him much relief by continued use of mercurial diuretics at weekly intervals over long periods of time. We now have several patients who have taken the drug continuously for two years or longer. If other diuretics can do the job in your patient, they are certainly less dangerous and should be used. In our cases of heart failure we have rarely found them to produce adequate diuresis.

The last, the most difficult, and the most neglected problem in handling patients with organic disease is that of psychotherapy. Everyone very early in life seems to acquire a sort of quiescent anxiety neurosis about his heart so that the least mention of any cardiac disorder, however simple or casual, will sometimes activate this anxiety state and years may be required to correct your error. The excessive metabolic demands made on the heart by constant fear, nervous tension, or acute

psychic episodes, may cause cardiac failure which might have been indefinitely postponed in a more stable person. Psychotherapy in patients with cardiac failure requires a lot of effort, patience, diplomacy, and finesse. Appraise your patient's psychic stamina as best you can, then be as honest as he will allow you to be. In short, you must teach your patient a new way of living and then convince him that this life is worth the living.

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Typhoid Carriers in Mississippi*

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Is there a typhoid problem in Mississippi today? If so, what are the state and county health departments doing about it and what can the private physician do to solve the problem? It is the purpose of this paper to answer these questions and to present a short review of the typhoid carrier situation from a statewide viewpoint as of October, 1947.

In viewing the typhoid fever morbidity and mortality rates from 1920 through 1946, one sees that the number of cases has dropped from 150 to 4.1 per 100,000, and the deaths from 20 to 0.4 per 100,000. This marked decline is due to a number of factors, the most important of which undoubtedly is immunization carried on on a mass scale. It is due to an increase in the living standard in Mississippi bringing about more adequate facilities for personal cleanliness and hygiene. It is also due to the discovery, education, and immunization of case contacts by private physicians, county health departments and the State Board of Health.

This decline can be looked upon with pride in past endeavors, but in 1947 it constitutes a definite menace. Either by personal experience or by seeing a chart of this kind, the average physician decides that typhoid fever is controlled, is a thing of the past and only a very slight worry at the present time. He is falsely led into the belief that typhoid is something you read about in textbooks, hear the older physicians reminisce about, but

never see any more.

Typhoid fever is still with us in a significant magnitude. There were 95 proved cases of typhoid fever in Mississippi in 1946. How many more cases were there that were missed because the doctor was not thinking very seriously of typhoid? In terms of cases per 100,000 these 95 cases appear small (only 4.1) but it must be agreed that 95 is a significant number of cases and the control of typhoid fever is still a problem.

The fact that these cases are scattered so equally about the state, reveals that the control of typhoid is not so much that of controlling epidemics as it is of discovering and controlling typhoid carriers.

That the private physician and the various public health officials have been active in discovering typhoid carriers in the recent past, is evident from the fact that prior to 1933 only 4 carriers had been discovered in Mississippi as compared to 318 as of September, 1947. 318 carriers seem like a large number at first glance, but when one considers the high incidence of typhoid fever in these cases still living, it is easy to see that 318 is but a small fraction of the actual number of carriers in Mississippi today.

In an article written in 1938, Dr. A. L. Gray estimated the probable number of typhoid carriers in Mississippi, at that time, as 5,991. This figure was arrived at from a random survey of 18,577 people in 16 counties. Realizing that many carriers have died in the past 9 years, it is still safe to assume that there are between 4,000-5,000 carriers at the present

*Read October 9 at Northeast Mississippi Medical Society at University of Mississippi.

time, only 318 of whom are known to the State Board of Health, and 242 of which are active carriers.

In a review of the 242 active carriers known to the state, the following facts were discovered; 176 or 72.7 per cent were females. The reason for this preponderance among females is open to conjecture but is probably due to the fact that women are more frequently discovered due to their frequent food-handling activities. Ages were fairly equally distributed between 1 and over 71 years of age, when discovered, most being between 31 and 70. Five carriers were discovered in pre-school children.

In determining the method of discovery, it was found that 159 or 65.7 per cent were uncovered by investigating known cases. 48 were found in routine food-handlers examinations, 31 by release examination of known cases, and 4 by other means.

184 carriers gave a history of having had typhoid, or an illness which was probably typhoid, in the past. 38 or 15.7 per cent, however, gave no history of illness which might have been typhoid, the moral here being that all carrier suspects should be investigated whether they give a history or not.

Although the figure given for those with gall bladder complaints is only 57 or 23.5 per cent, there is undoubtedly a much higher percentage. Only about one-half of the total of 242 cases studied included data on gall bladder complaints, whereas about one-half of those cases in which the information was included were positive. Thus, the percentage of those with gall bladder complaints is probably closer to 40-45 per cent.

When discovered, 105 were housewives (mostly farmwives), 48 were foodhandlers other than in the home, and 40 were farmers.

Having shown that there are approximately 35-4500 undiscovered typhoid carriers in Mississippi, let us review the means at the private physician's disposal for discovering carriers.

1. Keep typhoid fever always in mind while making a differential diagnosis so that no cases are missed.
2. Perform stool and urine examination on people most apt to spread typhoid. This includes foodhandlers of all sorts, farm housewives who help with dairying, farmers, etc.
3. Faithful securing of stool and urine cultures on all convalescent cases before release.
4. Adequate stool and urine examinations of all individuals who are incriminated

as possible sources of known cases.

5. Stool and urine examinations of all patients seen with gall bladder complaints. This is very important and too frequently overlooked.
6. Early reporting of all cases so that epidemiological work may be done at the most opportune time.
7. Urging all carriers who are good surgical risks to submit to cholecystectomy. In this light, a good talking point is the fact that carcinoma of the biliary tract is much more common among typhoid carriers than in the general population.

Having listed the opportunities and duties of the private physician in our typhoid carrier problem, let us now list the policy of the State Board of Health as concerns this problem.

1. Discover and locate carriers by epidemiological study of all reported cases.
2. Educate the carrier to the fact that he is a constant danger to his family, friends, and community. Impressing him with the importance of not handling food or milk to be consumed by anyone but his family, of insisting that his family remain immunized, of disposing of his excreta in a sanitary fashion, and of washing his hands thoroughly after each bowel movement.
3. That of maintaining an immune population around the carrier, including family, neighbors, friends and relatives who visit him frequently, although they live miles away.
4. Insisting upon adequate sanitary facilities at the carrier's disposal.
5. Continual knowledge of the carrier's location and supplying information to other states, when the carrier moves.
6. Promotion of the consumption of only pasteurized milk.

It is of interest to note that under such supervision, the carrier causes $2\frac{1}{2}$ times less cases than when unsupervised.

In conclusion—we have demonstrated that there is a definite typhoid carrier problem in Mississippi today, and have shown how the private physician, the county health officer and the State Board of Health must combat the problem. It must be remembered however, that the responsibility and privilege of solving this problem belongs just as much to the private physician as it does to the various public health agencies.

As long as there are typhoid carriers in Mississippi, there will be typhoid fever in Mississippi.

The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

It is estimated now that more doctors are needed to treat people past forty-five years of age than below forty-five. More and more of our population are passing the forty-five-year mark. This brings about two problems in the medical profession. It calls for more doctors to care for the increased population above forty-five and it calls for some doctors to give special study to geriatrics. Once a man and twice a child, has been said many times. The pediatricians have done a fine job with the first childhood of man but the second is quite important. It has its differences in the life of man quite as distinct as the first childhood. No one now takes stock in believing that a man should be chloroformed when he reaches sixty years of age. We now know that the culture and refinement and the knowledge and the wisdom of men even past seventy is sufficient to enrich our nation if properly utilized. The grain of life is in the wisdom of

years. The proper management of the physical body may aid its proper utilization for the common good. So the medical profession should duly consider the more or less neglected field of geriatrics. It is growing larger and it has always been important. To neglect the aged is like building a barn, filling it full of corn and leaving off the top, or keeping a flock of sheep and permitting them to shed the wool instead of shearing them and placing the wool to its proper use. If a man keeps mentally and physically fit he should be worth more to human society every day that he lives even though he lives to be a full century.

On Monday night, August 8, the official State Board of Health family, doctors and friends, gave a banquet in honor of Dr. Felix J. Underwood's twenty-five years of service as executive secretary. Dr. Henry Boswell was toastmaster for the occasion, Mrs. Elizabeth N. Wates general chairman, and Drs. H. C. Ricks and R. N. Whitfield participated in the program, Dr. Ricks giving some of the life history and work of Dr. Underwood while Dr. Whitfield contributed some low-down on him and introduced the governor, whose tribute recounted the fine work he had done for the state and the nation. He also delivered to him the keys to a new Buick automobile with all the accessories. Dr. Underwood responded with well-chosen words giving a brief review of the progress of public health work in the state. He stated that last year only one person in the state died of typhoid and only twelve of malaria.

The four to five hundred people present felt great pride in the work of the state health department and showed their gratitude to Dr. Underwood in admissions of frank admiration and esteem.

The mildness of symptoms and the variety of symptoms in so many polio cases make the diagnosis difficult. It is now thought that the disease may spread very much like chicken pox or influenza. The theory seems to be that many people have polio who are never diagnosed, neither the patient nor the doctor knows he has it. It is estimated that about one in a hundred who have the disease has paralysis. But polio seems to be on the increase and it behooves every doctor, every person, and every laboratory to put out the utmost effort in finding just the cause and the exact mode of spreading from one person to another.

FIFTY-YEAR RECOGNITION FOR DR. DYE

On June 19 Dr. T. M. Dye of Clarksdale, the beloved and the efficient secretary of the Mississippi State Medical Association, had his day at the First Methodist Church of his city. Rev. W. L. Robinson, his pastor, welcomed visitors and people of other denominations for the occasion. The service was well planned and very impressive. A brief history of his life and work was given by Dr. T. G. Hughes in an able manner. The certificate of membership in the Fifty-Year Club was delivered along with the pin. To see the way his home-folk feel about him, to share their inspiration and gratitude, is proof that he served them ably as a doctor, as a progressive citizen, and as a stalwart leader in his church. Love for his people over the years is returning to him multiplied many times. We trust he may have many more years of happiness and of useful service.

HOSPITALS

It appears without doubt that Mississippi has the best system of junior colleges of any state in the union. The college sites have been rather definitely planned to give service to all the people. Likewise our hospital system is being planned to reach every nook and corner of the state. Through more and better service it can be extended to the people. This transition from privately owned hospitals to public institutions will call for much adjustment in many ways. Many doctors have invested much money in private hospitals and have put much thought into their management. They deserve due credit for the service they have rendered. But as private colleges have largely passed, it seems that the privately owned hospital will yield to the public hospital with an open staff. The transfer of business, a definite policy of public relations, and the atmosphere of the private hospital to the public institution is vastly important. Trained hospital administrators are almost imperative for the new order, although doctors can not yield their personal interest in hospitals. After all the doctors behind the hospital are its strength. Better service for less cost proportionately should be the aim of the new order. The interest of the people in every public hospital is to be its genuine asset. In the matter of finances for the hospital, insurance to pay the hospital and the doctor

must be increased. The person who carries insurance pays it by the day and if he is lucky enough not to get sick in a general way he helps his neighbor who does and who has insurance. The problems of medicine need definite study as well as the technical treatment of the sick patient.

REMARKS BY DR. FELIX J. UNDERWOOD AT THE LUNCHEON MEETING OF THE FIFTY-YEAR CLUB, BUENA VISTA HOTEL, BILOXI, MISSISSIPPI, MAY 10, 1949

Many duties, pleasures and honors have been mine in my lifetime, but today is the high point of all.

The life of the honored and greatly beloved guest and friend today has been an inspiration and guide to many thousands of medical men all over the world. His friends, his students, and patients are legion and look to this man as a medical genius and leader of his day and time. Medical education and practice never had a greater or more modest leader. His name and fame are parts of medical history at home and abroad.

We and our children and their children will often speak of him and some daring souls will try to follow in his footsteps up and over the mountain range of human greatness and successful endeavor.

Rudolph Matas—the charm of the name—the stature and winsomeness of the man. His monumental achievements will be with us and those who follow always.

And now on behalf of the members of the Fifty-Year Club, I present you with this certificate. You are now in this Fifty-Year Club as you have always been in professional circles, one of us. We are honored to have you and only desire that you be half as happy about your membership as we are to have you as a member. May God bless and keep you always!

Dr. Rudolph Matas was born in New Orleans just before the opening of the War Between the States. He received his early education in Spain, in France, and in his native city. He is a graduate of Tulane University Medical Department and has honorary degrees from a long list of universities. Dr. Matas has always specialized in surgery and is widely known as one of the truly great surgeons of the past century. His original contributions to the science and art of surgery are many. In 1909 Dr. Matas was elected president of the Ameri-

can Surgical Association, the highest honor that can come to a surgeon. He is a member of a score of scientific associations and academies of medicine and surgery as well as a member of many European and South American societies. Dr. Matas has been decorated by several foreign governments including France, Spain, Venezuela, and Cuba. He has been an editor, a medalist, an author of many treatises and monographs on surgery. Perhaps Dr. Matas' greatest claim to fame is his original contribution to our knowledge of vascular surgery. It is no exaggeration to say that Dr. Matas is the first citizen of New Orleans.

ANNOUNCEMENTS

The Long, Dees and Edwards Clinic announces the association of Dr. David M. Switzer, Jr., in obstetrics and gynecology, 777 North State Street, Jackson, Mississippi.

E. Leonard Posey, Jr., M.D., announces the opening of his office for the practice of internal medicine and gastroenterology at 746 Manship Street, Jackson, Mississippi.

Dr. John J. Fahey, Skokie, has been promoted to the rank of associate professor in orthopaedic surgery at the University of Illinois College of Medicine, it was announced by Dr. John B. Youmans, dean of the college. Prior to coming to the University of Illinois, Dr. Fahey was on the staff of the University of Mississippi.

DEATHS

DR. A. M. DOTY

Dr. Doty, son of the late Mr. and Mrs. L. S. Doty, was born at Richland, Miss., on January 17, 1869. He was graduated from the Memphis Hospital Medical and Surgeon's College, now the University of Tennessee Medical College in Memphis, Tenn., in 1898, and did graduate work at the Southern California Polytechnic Chicago Medical Clinic and the University of Southern California.

Prior to his entry into medical college he practiced pharmacy in Yazoo City, Miss., and Meridian. He was licensed as a pharmacist in 1892 after serving the required apprenticeship in the drug store of Dr. Blundell of Yazoo City. His pharmacy license now hangs in the Doty Drug Store in Jackson and is one of the most treasured possessions of his son.

Dr. Doty was a charter member of the Mississippi State Pharmaceutical Association and never lost interest in its program and activities.

Dr. Doty was organizer of the Holmes County Medical Association, merged with the North Central Association, a charter member of the Lexington Rotary Club and for many years was a steward of the Lexington Methodist Church. A pioneer in the field of medicine in Holmes County in the use of iodine, he led in the use of many drugs and methods of health-giving programs. He was instrumental in revolutionizing the obstetrical procedure in his county and was one of the promoters and leading spirits in the creation of the Lexington hospital, being the first one to contribute to the fund for its construction.

Surviving are his wife, Mrs. Clyde Belk Doty, Lexington; a son, N. V. Doty, Jackson; three daughters, Mrs. M. C. Frazer, Mrs. John B. Greer, Jr., Columbia, S. C.; Mrs. C. N. Wallis, Phoenix, Ariz.; three brothers, Ernest A. and Emmett O. Doty, Kosciusko; L. H. Doty, Biloxi; two sisters, Mrs. G. A. Kimberly, Little Rock; Mrs. S. N. Whiting, Chicago, and three grandchildren. Services were held in the Methodist Church of Lexington, in which Dr. Doty worshipped for many years. The Rev. C. T. Floyd, pastor, officiated. Burial followed in the Odd Fellows cemetery.

Interested in the education of young people, Dr. Doty served on the Lexington school board for many years. He also held membership in the Woodmen of the World.

DR. W. J. STRIBLING

Dr. William Jay Stribling, life long resident of Neshoba County, and prominent physician for many years passed away at his home May 24 following a lingering illness. Dr. Stribling had been confined to his bed for several weeks.

Born and reared in the Coldwater community, the son of the late Samuel H. Stribling and Delia Jay Stribling, he moved with his parents to Philadelphia when three years of age, where he has since resided. The father was for many years tax assessor of Neshoba county, circuit clerk and chancery clerk and was the first president of the Bank of Philadelphia.

Educated in the schools of his county, Dr. Stribling entered Tulane University, later transferring to the University of Tennessee, where he received his medical degree.

For twenty-five years he served as county health officer, a position he held at the time of his death. He was a member of the First Methodist Church on the board of trustees, and his fraternal relations were with the Masonic Order.

For many years Dr. Stribling was interested in the political affairs of his county and state, and though never soliciting an office, no person took a greater interest. He was an ardent lover of sports and as a sportsman was known over the length and breadth of the state. He was also a director of the Citizens Bank.

Dr. Stribling was married in young manhood to Miss Nellie Dees who preceded him in death in 1939. He is survived by four sons, Bruce Stribling, retired, U. S. Navy, and Mayor Dees Stribling, this city, Jim Stribling, with the Veterans Administration, Jackson, and Dr. Samuel H. Stribling, Southern Pacific Hospital Houston, Texas, one sister, Mrs. G. E. Wilson, Philadelphia and a brother, J. H. Stribling, Azle, Texas.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson
Otolaryngology—Charles R. Hume
Ophthalmology—Edley Jones, Vicksburg
Obstetrics and Gynecology—J. F. Lucas, Greenwood.
Orthopedics—Thomas H. Blake, Jackson.
Public Health—Felix J. Underwood, Jackson.
Pediatrics—Harvey F. Garrison, Jackson.
Radiology and Roentgenology—Karl O. Stingily, Meridian.
Pathology—R. M. Moore, Vicksburg, Miss
Surgery—W. H. Parsons, Vicksburg.
Urology—Temple Ainsworth, Jackson.

PEDIATRICS

FEBRILE CONVULSIONS. A CLINICAL STUDY WITH SPECIAL REFERENCE TO HEREDITY AND PROGNOSIS.—Samuel Livingston, Edward M. Bridge and Laslo Kajdi, Johns Hopkins University Medical School, Baltimore, Md., *Journal of Pediatrics*, 31:509-12, November 1947.

"The case histories of 94 patients with recurrent convulsions in whom the first convulsive seizure was associated with acute febrile illness were analyzed. All of the patients in whom all seizures had been an accompaniment of febrile illness remained free of seizure for a period of at least two years (the criterion of recovery). Only 37 per cent of the patients who had experienced seizures during afebrile periods as well as with fever remained similarly free. The age of onset of the initial seizure ranged from 3 months to 8½ years. The greatest frequency fell within the first 2 years of life.

The recovery rate was 64 per cent in patients who had only generalized seizures as compared to 24 per cent in the group who sometimes manifested a focal lesion. The recovery rate was likewise more favorable in those having fewer seizures as compared to those having a greater number of attacks. The prognosis was not apparently altered, however, by the treatment employed.

The outlook was more favorable in patients with a family history of childhood convulsions in near relatives than in those with a family history of chronic epilepsy and better than those with no family history of convulsive at-

tacks. This would suggest a difference between the hereditary factors predisposing to childhood convulsions. The relatively poor prognosis in patients with no family history of convulsions suggests that convulsions in these patients may more often be dependent on exogenous injury to the brain."

COMMENT: It is generally accepted that the effect of heredity on anyone is apparent, and in the cases represented here, this seems to run true to form. Those of us who have made a special study of childhood diseases and the relative effects of heredity are quite familiar with such findings as are presented in this survey.

VA PATHOLOGY

The patient, an 11 year old colored boy, was first admitted to the QGH two months before death complaining of RLQ pain and vomiting. The present illness had apparently begun five days before with malaise, followed the next day by persistent abdominal pain and vomiting. On the third day of the illness the temperature had been 100, and had reached 102 on the day of admission.

Physical examination on admission revealed a well developed and well nourished colored boy lying comfortably in bed, although his temperature was 102. The heart was slightly enlarged to the left, with the apex beat in the midclavicular line in the fifth interspace. There was a regular sinus rhythm at 96. A soft blowing murmur completely replaced both heart sounds at both apex and base, and there was a marked apical thrust. The chest was clear. The abdomen presented RLQ tenderness both direct and rebound. The liver and spleen could not be felt. The tonsils were enlarged and injected.

The child was immediately operated upon and a normal appearing appendix removed. Pathological examination of the appendix revealed only oxyuris infestation. Postoperatively the patient ran a spiking fever reaching 103. A pediatric consultation was obtained. On this occasion the heart was described as presenting a loud blowing double murmur, loudest in the third left IS and radiating to both apex and base. It was transmitted all over the precordium, and to the axilla and back. This.

description appears throughout the remainder of the record. By the third postoperative day, the heart was greatly enlarged, the apex beat being in the seventh IS in the anterior axillary line. At this time the further history was obtained from the IMD that the child had had a double murmur since birth, and that the present illness had been preceded by a sore throat and joint pains. The BP was 120/0 on numerous examinations.

For a few days the child did fairly well, but on the tenth postoperative day his temperature rose to 102, and reached 104 on the next day. His temperature was spiking in character, the daily swings going from 99-104. Innumerable blood cultures were negative, but the child was given sulfadiazine from 8/19-8/ (p.o. 11-14), and from 8/24-8/29 (p.o. 16-21). His temperature consistently spiked to 104 throughout this period, the cardiac murmurs became louder, and the heart sounds more distant. On September 1 (p.o. 24) penicillin was started and the fever fell, the daily spikes being 102-103, although the heart rate be-

came very rapid. The boy did, however, seem better subjectively. Penicillin was stopped on 9/18 because no definite response was obtained, but for the rest of the month of September the temperature ran about 100-101. Early in October, however, the child again became clinically worse, with renewed temperature spikes and a marked tachycardia (P was 130-140). On 10/6 he was started on massive oral salicylate therapy. This produced no definite effect except nausea and vomiting. On 10/12 the boy became extremely dyspneic and orthopneic with pulse of 140, temp. of 101.5, and he complained of severe substernal pain. The cardiac sounds were fainter. He was then slowly digitalized (gr. $\frac{3}{4}$ t.i.d. for two days). The pulse rate was unaffected and the temperature rose. In 10/16 the pulse rate was 160. By 10/18 he was obviously fibrillating at 150. Rapid digitalization was attempted again without result, and the patient died on 10/19 after two months of illness.

—From Pathology Dept., Queens General Hospital, Jamaica, N. Y.

State Board of Health

Felix J. Underwood, M. D.

INDUSTRIAL HYGIENE ACTIVITIES

1947 - 1949

by

J. W. Dugger, M. D.

Director

Promotion of better health programs in industry and an extension of services to a larger number of plants were realized during the 1947-1949 biennium. An illness reporting system was instituted, in which it is hoped that the larger plants can be prevailed upon to report absenteeism due to illness at monthly intervals. This information, which will be kept confidential, will provide a statistical basis for more intelligent planning of the industrial health program. Forms for reporting have been distributed and are already being received from a number of plants, with increases anticipated.

Additional emphasis was placed on correlation of activities of the various professional

personnel of the division, which now include a medical director, a nurse, two engineers, and a chemist. A study made of a thermometer plant exemplifies the type of teamwork engaged in. On the basis of initial engineering field determinations which indicated excessive mercury vapor concentration in the working atmosphere, engineering measures were recommended to control this hazard. The medical director examined the workers to ascertain symptoms of mercurialism, and urinalyses were made in the laboratory for correlation with medical and atmospheric findings. While studies on this plant have not been completed, working conditions have shown marked improvement. Although the number of workers employed is small, the hazard is considered particularly significant because of the highly toxic nature of mercury.

The Mississippi State Board of Health on December 6, 1948, approved a revision of regulation: Safety of the Working Environment.

This regulation establishes maximum allowable concentration, considered safe for an 8-hour day, 40-hour week, for virtually every known toxic substance. While not all of the substances for which maximum allowable concentration were established are in use in industries of the state at the present time, it was felt desirable to establish standards in the event of their future use. Reference was made to the list accepted by the American Conference of Governmental Industrial Hygienists in establishing these values as maximum allowable concentration.

Engineering Services

Work of the engineering program continued to expand beyond expectations during the biennium so that it became necessary to secure the services of another industrial hygiene engineer in September 1948. Activities were divided into three general classes: routine factory inspections required by the State Factory Inspection Law; request and specific engineering services; a general survey of a representative cross-section of the dry cleaning industry of the state.

Engineers cooperated with other professional personnel of the division in making routine inspections of factories which employ women. Particular emphasis was placed on ventilation, lighting, noise abatement, provision of safe and adequate sanitation and drinking facilities, potable water supply, safe disposal of sewage, and heat and humidity considerations. The industries as a whole have cooperated to the fullest as shown by the increased number of recommendations which have been carried out.

An extensive and detailed study was made in a thermometer manufacturing plant in which excessive mercury vapor concentrations were found in the air. Field determinations made for atmospheric concentrations showed the presence of 3.2 milligrams per cubic meter, or 32 times the maximum allowable concentration considered safe for continuous exposure. This finding was consistent with laboratory results which indicated high mercury concentrations in collected urine samples. Engineering recommendations resulted in diminution of the mercury vapors to 0.05 milligram per cubic meter, well within the maximum allowable concentration and less than 2 per cent of that originally observed. This plant however is being kept under observation to assure continued safe working conditions.

Another technical survey was made at the request of a large mirror manufacturer to check the amounts of toxic materials in use. Laboratory findings on samples collected by division engineers indicated excessive concentrations of both ammonia and nitric acid fumes in some of the operations, with the former ranging up to 1.5 times the maximum allowable concentration and the latter to 6 times the maximum allowable concentration. Engineering recommendations for the control of these hazards were made, and further samples will be collected during the summer to evaluate the effectiveness of these control measures. The spirit of cooperation and courtesy shown by management of the plant, both in providing necessary information and in the reception of the findings, was gratifying.

These are only two of the many industrial plants studied. Others included a superphosphate fertilizer plant, seed-treating plants using mercury compounds, textile and garment plants, a lamp manufacturer, a filter clay manufacturer, and numerous others.

An extensive study of the dry cleaning industry of the state was initiated to ascertain working conditions. Up to the present time 172 of these plants have been surveyed and individual letters of recommendations or suggested improvements have been sent to plant managers. Conditions in only 7 of the establishments were such that no recommendations were necessary.

Of the plants visited, only 4, or 2.32 per cent used synthetic solvents, carbon tetrachloride and perchlorethylene, which are particularly hazardous to health.

The remaining 168 utilize the less toxic petroleum solvents, known variously as Stoddard's Solvent, Mineral Spirits, and Cleaner's Naphtha, for which the maximum allowable concentration is 500 parts per million. Only 9 of these 168 plants, or 5.35 per cent, had excessive concentrations of solvent vapors at the time of the visits. However, in an additional 11, or 6.55 per cent, the level was just below maximum allowable concentration. Ventilation was considered inadequate in 30, or 17.8 per cent, of these plants. It was also found that in 73, or 43.5 per cent, solvent storage and/or transfer was poor, while in a like number of cases solvent from the extractors drained into open containers. In 45, or 26.8 per cent, tumbler exhausts were so located that solvent vapors exhausted reentered the workroom. Operating technique was poor in 39

(23.2 per cent) with excessive solvent spillage, washers containing solvent left open while in operation, and waste from the filter units not promptly disposed of. These practices allow unnecessary escape of solvent vapors into the workroom air, and undoubtedly a large number of the plants would have experienced excessive vapor concentration except for their exhaust ventilation.

Sanitation in the dry cleaning plants was surprisingly poor, with 87 (51.8 per cent) lacking sanitary drinking facilities. Inadequate and/or poorly kept toilet facilities were also common, while handwashing facilities were almost nonexistent.

Industrial Nursing

Many changes have been made in the industrial nursing field, as industries shifted from war-time to peace-time production. Some of the smaller ones closed permanently; others reduced the number of employees to the pre-war number. As a result 12 plants found it necessary to terminate the employment of 34 nurses. However, 8 new nursing programs have been established in other industries with graduate nurses employed, and 3 additional plants are now ready to begin their nursing programs.

The nursing consultant has given continuous and efficient help to management in developing their nursing programs and in securing adequately qualified nurses to fill the positions available. Since very few are trained for industrial nursing, it is necessary for the consultant to work closely during the orientation period with all new industrial nurses. This is done jointly with management and physicians.

The majority of industries employ fewer than 200 people. For this reason, many employers do not feel the need for nursing programs and therefore much of the work is with first-aid attendants. The consultant nurse plans to spend more time with these attendants, since over half of the industrial workers of the state are employed in these smaller industries.

The future of industrial nursing is a challenging one. It demands higher levels of performance, the development of greater professional skills, and a close integration of the nurses' work into the basic pattern of the general health program. These expanded and more profound responsibilities are envisaged in the new concept of industrial medicine, which embraces preventive as well as curative

medicine and a consideration of psychosomatic factors as well as organic ones.

Chemical Service

The Division of Industrial Hygiene has a chemical laboratory which is well equipped and is able to render a complete chemical service to industry. It has engaged in making analyses and studies of various gases, vapors, mists and other substances which might be deleterious to the health of workers. At the request of industry, dust studies were made and the samples collected were analyzed in the laboratory. In two instances the industries had been declared a health hazard by the community in which they were located. The study revealed that these complaints were unfounded. Free silica analyses were made on the dust samples to determine whether or not they constituted health hazards.

Samples of urine from workers in a thermometer plant were made at intervals to determine the amount of urinary mercury present. These determinations will continue until it is felt that the workers are safe. Atmospheric samples collected in a mirror plant were analyzed for nitric acid and ammonia. Atmospheric samples were also collected in a fluorescent light plant and analyzed in the laboratory for beryllium.

The laboratory calibrated instruments to be used in the field and laboratory, such as the combustible gas indicator and the micro gas analyzer. The chemical laboratory performed water and sewage analyses, vitamin assays on corn and flour products, and assisted water plant operators in water treatment.

X-RAY PELVIMETRY FOR PHYSICIANS

The Division of Maternal and Child Health of the State Board of Health has been making available demonstrations in x-ray pelvimetry for the last six months. Mississippi physicians who are interested in using x-ray pelvimetry in their maternity practice, clinic, or hospital will be glad to know that this demonstration service is available to them upon request to the State Board of Health. A well qualified x-ray technician, who received special training at Johns Hopkins Hospital in the demonstration of the Thoms' x-ray pelvimetry technique, is on hand to help with this service.

Dr. Virginia Downes, director of the Division of Maternal and Child Health, points out that the Thoms' technique is a simple, inexpensive method, which can help reduce both infant and maternal mortality and morbidity.

Woman's Auxiliary

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DO WE WANT IT?

The following may be used by auxiliary members in promoting their program this fall:

Q. Would socialized medicine lead to socialization of other phases of American life?

A. Lenin thought so. He declared: "Socializ-

ed medicine is the keystone to the arch of the Socialist State."

Today, much of the world has launched out on that road. If the medical profession should be socialized because people need doctors, why not the milk industry? Certainly, more people need milk every day than need doctors.

On the same erroneous premise, why not the corner grocery? Adequate diet is the very basis of good health!

Why not nationalize lawyers, miners, businessmen, farmers? Germany did, Russia did. England is in the process.

Q. What does this prove?

A. It proves that America is the last great free nation on earth!

It is strong and productive and virile enough today, under its own system, to shoulder the burdens of the rest of the world!

It proves that the greatest error in all history would be for America to start borrowing the unsuccessful systems of foreign countries which today are on their feet only because the American system is strong enough to support them!

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Diagnosis and Treatment of Malignant Tumors of the Throat*

FREDERICK A. FIGI, M.D.

Section on Laryngology, Oral and Plastic Surgery,

Mayo Clinic, Rochester, Minnesota

MALIGNANT tumors of the pharynx and larynx must have the serious consideration of the general practitioner as well as of the laryngologist, for most patients with such lesions are seen primarily by the family physician. These neoplasms are not common but they occur often enough so that they must be considered as a possibility in any patient presenting symptoms referable to the throat. Often these lesions progress to an advanced stage before they are recognized, and because of this fact together with their activity they continue to exact an unnecessarily high death toll. This is especially true of the pharyngeal tumor. The laryngeal neoplasms quite generally offer a satisfactory prognosis providing they are diagnosed early and treated properly.

Malignant tumors of the throat are encountered more often than benign neoplasms in this situation. They generally occur in persons of middle or advanced age, and males are affected much more frequently than females. The latter is especially true in cancer of the larynx, which is encountered approximately ten times as often in men as in women. Most of these neoplasms in both the pharynx and larynx are rapid growing. However, they differ in the two situations in that those of the pharynx metastasize early while those of the larynx usually are slow in extending to the lymphatics. It is largely because of this fact that a malignant lesion of the pharynx does not long remain amenable to surgical removal, while such lesions in the larynx often continue to be operable for more than a year.

Malignant tumors of the oropharynx may originate on the soft palate, the uvula, the faucial pillars, the tonsils or on the lateral and posterior walls of this structure. Such tumors may arise in the nasopharynx or in any portion of the hypopharynx including the lateral and posterior walls, the base of the tongue and the laryngopharynx. A difference in the type, clinical features, symptomatology and response to therapy of the tumors develop-

ing in different parts of the throat is commonly noted. Accordingly, these tumors are best considered from the standpoint of their site of origin.

Oropharynx

The malignant neoplasms of the pharynx are largely high-grade squamous-cell epithelias and lymphosarcomas. Fibrosarcomas and adenocarcinomas occur less frequently. Multiple malignant tumors may occur at the site but they are rare. Bilateral lymphosarcomas of the tonsils have come under our observation on several occasions. While a malignant lesion having its origin in the soft palate or in the walls of the oropharynx usually is very active, it may at times be slow growing. Encapsulated adenocarcinomas of mixed-tumor type not infrequently develop in the soft palate and elsewhere in the pharynx, and because they progress slowly they often are asymptomatic and usually attain considerable size before attracting the patient's attention. Actually, the guttural tone of the patient's voice or the stertorous respirations during sleep may be noted by others before the patient himself becomes aware of any throat difficulty.

The symptoms of malignant disease of the oropharynx may be severe, mild or entirely absent. Usually, an aching or a persistent soreness is present or there may be severe lancinating pain with extension into the ear on swallowing. The severity of the symptoms in a great measure depends on the nature of the lesion, its situation, extent and the character of the inflammatory reaction present. The history usually is of a disease of short duration that rarely extends back for more than a few weeks. As a rule, epitheliomas produce a good deal of pain. This often is true even in the early stages of the disease, the discomfort frequently being out of all proportion to the clinical findings. When situated on the lateral wall of the oropharynx and especially when adjacent to the junction of the tonsillar pillars with the base of the tongue, a superficial epithelioma that is dif-

*Delivered at the fifty-ninth annual session of the Mid-South Postgraduate Medical Assembly, Memphis, Tenn., Feb. 10--13, 1948.

difficult to visualize even with satisfactory illumination may cause excruciating pain. As these growths progress, ulceration deepens and inflammatory reaction increases, odynophagia becomes more marked and salivation with bleeding and loss of weight develops. Lymphosarcomas and sarcomas of other types in this region are likely to be less painful, and in the early stages the patient often experiences only persistent soreness or little if any discomfort. As noted previously, adenocarcinomas commonly are symptomless until they attain considerable size.

The physical findings in these cases vary considerably. Epitheliomas are not likely to be discovered until after ulceration has developed. However, the occasional low-grade squamous-cell epithelioma encountered at this site may not have ulcerated, since ulceration of a lesion of this type does not occur until comparatively late. At times there is infiltration of the lateral wall of the pharynx, tonsillar region and adjacent base of the tongue without ulceration, and inspection of extensive tumors may show only limited mobility of these structures. In such cases palpation of the involved region with the finger reveals diffuse induration and tenderness and this diagnostic aid should be utilized routinely. Its importance cannot be overemphasized. These findings in a patient past 40 years of age who has had pain in this region for several weeks are almost pathognomonic of carcinoma.

Lymphosarcomas usually produce diffuse unilateral enlargement of the tonsils with a varying degree of inflammation and moderate induration. In the early stages the condition may strongly resemble a chronic inflammatory process with marked enlargement of the tonsil, and it frequently is treated as such on this account. When the involvement affects both tonsils, the confusion in this respect is accentuated. Lymphosarcomas may develop elsewhere in the oropharynx and also in the nasopharynx and hypopharynx. Fibrosarcomas may present a similar appearance but they are less likely to involve the tonsil and often are firmer and more discrete.

Involvement of the cervical lymph nodes often is present by the time the patient with an epithelioma or lymphosarcoma of the pharynx comes under observation. This is especially likely to be true if appreciable inflammatory reaction has been associated with the condition.

In cases of adenocarcinoma of mixed-tumor type, the disease usually is of long duration, often having been present for several years. The tumor is painless, firm or hard, frequently nodular and as a rule appears well encapsulated. Such neoplasms may be very extensive, produce marked distortion of the pharynx and because of their size be palpable externally posterior to the ascending ramus of the mandible or in the submaxillary region. They may cause the patient to speak in a guttural tone of voice and even produce dyspnea and dysphagia, yet continue to be painless. These neoplasms are classified as benign by some observers but there seems little justification for this since they recur if incompletely removed and they may metastasize.

Epitheliomas of the pharynx that come under observation early may be electrocoagulated, and this treatment may be supplemented with local implantation of radon seeds. External radiation or a gland dissection is done subsequently depending on the activity of the malignant process and on the prognosis as regards control of the primary lesion. In general, radiation is preferable to surgical measures in most of such cases. Lymphosarcomas of the pharynx should always be treated with radiation. Adenocarcinomas of mixed-tumor type, being encapsulated, should be removed surgically when this is feasible. Preliminary ligation of the external carotid artery facilitates this procedure.

Nasopharynx

Malignant tumors of the nasopharynx occur more frequently than is generally supposed. They are chiefly highly malignant, squamous-cell epitheliomas and lymphosarcomas, and they originate most commonly in the fossa of Rosenmüller. At this site they are in close proximity to a number of important structures, and through involvement of these produce a characteristic symptom complex. The outstanding features of this are (1) deep-seated, more or less constant, aching or boring pain localized in the frontotemporal or parietal region on the side of the involvement and worse at night, (2) symptoms referable to the ear, consisting of tinnitus, roaring noises, pain and deafness, (3) neurologic disturbances attributable to involvement of the second, third, fifth, sixth, ninth, tenth and twelfth cranial nerves and the cervical sympathetic trunk, the most common neurologic symptom being palsy of the external rectus

muscle attributable to involvement of the sixth nerve, and (4) the presence of a metastatic mass in the neck, which at times precedes other symptoms by a number of months. Although the tumor in the nasopharynx may be sufficiently large at the time of the original examination to produce nasal obstruction, this is unusual, as is also bleeding from the nose and throat.

Because of the activity of these tumors, the difficulty of determining their extent, and their inaccessibility, irradiation is the treatment of choice. Roentgen therapy or radium packs are used externally and radium tubes on a lead applicator are placed directly in contact with the tumor in the nasopharynx. Palliation only is likely to be obtained, although the growth often can be held in check and the patient kept in comparative comfort for several years. In a few instances complete arrest of the disease has resulted. This has been noted with increased frequency since fractional roentgen therapy has been used in treating this condition.

Base of Tongue and Hypopharynx

The neoplasms of the base of the tongue and hypopharynx are very largely highly malignant squamous-cell epitheliomas, lymphosarcomas and adenocarcinomas. Often these become well advanced before they produce symptoms sufficiently severe to lead the patient to consult a physician. A lump in the neck due to a metastatic lesion in a cervical node may be the first indication of trouble noticed by the patient. However, at times these tumors very early produce severe pain extending to the ear, especially upon swallowing. This may be lancinating in character and suggestive of glossopharyngeal neuralgia. A sensation as of a lump in the throat or dysphagia may be the first symptom.

Irradiation is the treatment of choice. If the condition is recognized early, radon seeds are implanted into the local lesion, direct laryngoscopy or suspension apparatus laryngoscopy being used, and this is followed by roentgen therapy or the use of radium packs. In case the malignant process is advanced, fractional roentgen therapy is preferable. While an occasional lesion in this group is entirely eradicated by this treatment, in general, palliation only is to be expected.

Larynx and Adjacent Structures

In contrast to the neoplasms of the base of the tongue and hypopharynx those originating

on the epiglottis, aryepiglottic folds and ventricular bands show less tendency to infiltrate locally and they metastasize late. Most of them are squamous-cell epitheliomas; a few are fibrosarcomas. They are best removed surgically by use of suspension laryngoscopy and electrocoagulation supplemented with interstitial radiation.

The lesions arising in the pyriform fossae, on the arytenoids and in the postcricoid region correspond to those of the hypopharynx, being extremely active and disseminating promptly. All of the tumors in these regions, with the exception of those of the postcricoid group, occur predominantly in males; the latter are seen almost exclusively in females. The majority of the tumors of the pyriform fossae and the postcricoid region are treated preferably with radiation.

As previously noted, cancer of the larynx occurs much more frequently in males than in females. With few exceptions it is squamous cell in type, originates on the anterior two thirds of the vocal cords and is slow to metastasize. The earliest and most common symptom in the majority of cases is hoarseness. Accordingly, change in the voice of an adult male which persists for more than a few weeks should always arouse suspicion. Dyspnea, dysphagia, pain and hemorrhage usually indicate an advanced stage of laryngeal malignant disease.

To an experienced laryngologist carcinoma of the larynx is recognizable on clinical examination in the majority of cases, but treatment should never be undertaken without a biopsy for confirmation. Inflammatory lesions often strongly simulate cancer of the larynx, and failure to carry out microscopic studies has at times resulted in needless removal of this structure.

Carcinoma of the larynx generally must be dealt with by means of radical surgical treatment as only through an open operation can the majority of these lesions be clearly visualized. While a selected group of well-localized, superficial, low-grade lesions situated on the middle third of the vocal cords as well as those of the supraglottic region can be eradicated by means of electrocoagulation using suspension laryngoscopy, thyrotomy or laryngofissure usually is the procedure of choice for dealing with localized malignant tumors of the larynx. However, laryngologists hold widely divergent views concerning the indications for its use. My own inclination is to

utilize this operation in cases of laryngeal carcinoma in which the tumor is inactive and not fixed, or if active, the growth must be early and localized. I have, on a number of occasions, carried out the procedure for the removal of tumors of low-grade or moderate activity involving the entire length of one vocal cord and approximately the anterior one third of the other cord. The operation leaves the patient with a very useful and often an almost normal voice and does not alter the upper air passage. The procedure consists of dividing the thyroid cartilage usually in the median line, although when the lesion extends into the anterior commissure it is safer to open the larynx a little to the opposite side. A fine-toothed, motor-driven saw is best for this purpose. After this exposure, the lesion is excised and the wound electrocoagulated or the growth is electrocoagulated in situ. A tracheal cannula is inserted below the cricoid cartilage prior to closing the wound loosely. Free drainage of the wound is essential in order to guard against emphysema. The tracheotomy tube can usually be removed after a week or ten days, and healing of the wound in the neck is complete in about three weeks. In our experience at the clinic, 83.6 per cent of the patients who underwent this operation have had five-year cures.

When the malignant process is active and involves both sides of the larynx, or is fixed, complete removal of the larynx alone offers a reasonable chance of controlling the disease.

This procedure has gradually been perfected during the course of years until at present the mortality rate following it is remarkably low, considering its extent. At the clinic we have carried out laryngectomy on 217 patients during the past seven years with only one postoperative death. This was that of a man 84 years of age who, because of his age, probably should have been treated with radiation rather than by operation. This statement is not made in a boastful spirit but merely to show how increased experience reflects on the safety of the patient. The operation is best done under cervical block anesthesia and preferably in a single stage unless the age or general condition of the patient necessitates preliminary tracheotomy. Although most laryngeal carcinomas are highly malignant, the operation offers slightly better than a 60 per cent chance for five-year cure, providing the tumor has not spread beyond the larynx.

While laryngectomy permanently deprives the patient of his normal voice, a large percentage of such persons are able to develop a good pharyngeal or esophageal voice and the remainder acquire satisfactory speech with the use of one of the mechanical contrivances made for this purpose. The exposed tracheal opening causes comparatively little inconvenience, and such patients seem no more subject to infections of the respiratory tract than are normal persons. Providing there is no recurrence of the neoplasm, longevity does not appear to be affected.

PSYCHIATRIST SUMS IT UP

One of the best articles on the much-discussed subject, socialized medicine, was written by Dr. Franklin G. Ebaugh of Denver, Colo., entitled "A Psychiatrist Looks at Compulsory Health Insurance." Reprints may be obtained from the Colorado State Medical Society, Denver, Colo.

A Medullary Fracture Pin for Spring-Type Fixation: As Applied to the Femur*

LESLIE V. RUSH, M.D., and H. LOWRY RUSH, M.D.
Meridian, Miss.

EDITOR'S NOTE: *This is the first of a series of articles on medullary fixation of fractures which will appear during the coming months in the MISSISSIPPI DOCTOR.*

* * *

THE recent literature has given rise to confusion concerning the physiology, technique, and fields of usefulness of medullary fixation of fractures. These articles are supplemental to three which will appear in other journals. The broad scope of the subject makes the multiplicity of articles necessary to present accurately the results of our research.

Until the present time, no material on this subject has been published by us since our original papers in 1937² and 1939³, although our research has continued uninterruptedly.

In the *American Journal of Surgery*, a current article discusses the evolution of the method and its general application to fractures. It points out that, contrary to popular conception, the principle did not originate with Kuntscher of Kiel, Germany, in 1940, but was used and advocated in America several years prior to his work, and that an axial wire was used by Lambotte of Belgium to fix a clavicle fracture as early as 1907. In an early issue of *The Southern Surgeon*, the application of the method to Colles' fractures is reported. An article soon to appear in *Surgery* discusses the technique of medullary fixation of fractures of humerus with a critical analysis of fourteen cases.

Our total series of cases is now far in excess of one hundred. These experiments have increased our confidence and enthusiasm for the method. It has been found that its fields of usefulness are much greater than previous reports suggest.

These articles will discuss the application of the method to the other long bones, the jaw, and the fractures in close proximity to the joints.

The principle of fracture fixation which we wish to present is based upon the thesis that osteogenesis is best stimulated by constant and continuous compression of the bone ends.

The animal experiments of Eggers, Schindler, and Pomerat¹ of Galveston, Texas, beautifully demonstrate the importance of this factor in bone healing. The results of their experiments seemed to indicate that continuous physiologic compression of the fractured bone ends by normal muscle pull, rather than rigid fixation, best stimulates bone healing.

Criteria. Carrying these thoughts a step farther, in developing this method certain criteria have been borne in mind. A satisfactory method should: 1) be simple and safe, 2) restore continuity of the bone, 3) provide secure but not necessarily rigid fixation while limiting lateral displacement, angulation, and torque, 4) assure continuous physiologic compression of the bone ends by muscle pull, 5) minimize trauma to the bone, its marrow, and surrounding soft tissues, and 6) assure early return to function with gradual resumption of weight bearing.

Believing that in selected cases intramedullary fixation approached this ideal, we have worked for thirteen years developing a satisfactory technique for utilizing this principle.^{2, 3} The aim has been to develop a simple method, applicable to all the long bones, both in the diaphysis and near the joints. The method is intriguing and offers splendid potentialities, is still developmental and offers many pitfalls and hidden dangers.

The purpose of this communication is to present a new principle of intramedullary fixation, and to describe a pin of new design for this purpose.

Our observations in more than sixty cases concerning most of the long bones of the body have been described elsewhere. While our mechanical difficulties have been many, there have been no major complications. There have been no gross deformities, no deaths, and no embolism. Stiffness of the joints and muscle atrophy have been lessened. One minor infection occurred. There has been no non-union

*From the Department of Surgery, Rush Memorial Hospital, Meridian, Mississippi.

attributable to the pin, and no bone absorption. On the whole, healing has been more rapid than has been usually observed using other methods. The early return of the extremity to function has been extremely gratifying.

Compared with Other Methods

Kirschner Wire: Much work in this country at the present time is being done with axial wires. While convenient to use, they do not give sufficient stability and require the use of casts and splints which defeat their purpose.

Marrow Nails: The nails of Kuntscher⁵, Hansen and Street⁶, and Westerborn⁷, with their various modifications, are designed to give rigid stabilization by being snugly impacted in the narrow portions of the medullary canal. Their fields of application are limited. A large armamentarium of instruments is necessary for their application and withdrawal, both procedures appearing to be rather complicated. The continuity of the bone, however, is re-established with early return to function. Lateral displacement and angulation are prevented and torque is resisted by the tight fit of the nail within the marrow cavity.

Large incisions and much destruction of the contents of the medullary cavity are at times necessitated, particularly by the application of the nail retrograde. A great deal has been written to establish the fact that the destruction of the marrow of bones does little harm, and that the presence of foreign material within the medullary canal stimulates osteogenesis. Despite these opinions, however, common sense suggests that unnecessary destruction of endosteum with possible crippling of the nutrient vessels and unnecessary bone trauma are not desirable features of any method.

Tight objects within the marrow are not conducive to continuous compression of the bone ends, preventing free play of the physiologic muscle pull upon the bone fragments. Too large a bar might split the cortex of the bone or become jammed in the bones, as pointed out by Bohler⁸, in such a fashion that its introduction or removal might be difficult. Permanent distraction may be brought about by the same mechanism.

Longitudinal Pin: The deficiencies of these methods are satisfactorily overcome, we feel, by the use of a pin of smaller diameter and of a new design. Its purpose is to utilize the natural muscle pull of the extremity, and not

to fill the medullary canal. Its merits will become evident as we proceed.

The Longitudinal Pin

In order to present the spring principle of fixation it is necessary first to describe the essential features of the pin which is designed for this purpose. (Fig. 1.)

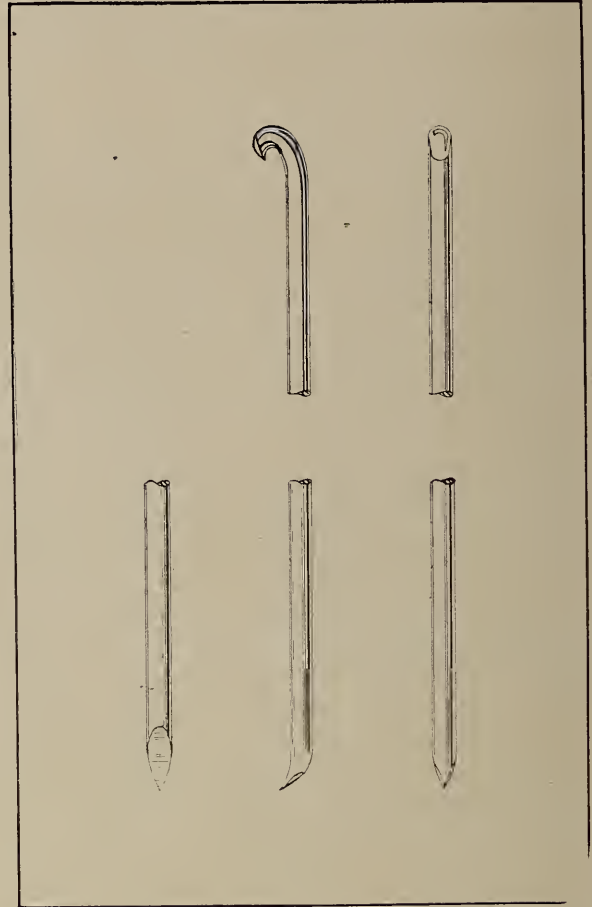


Figure 1. Drawing of pin. Made of round, resilient, stainless steel rod. Note hooked head and sled-runner point face same direction.

The pin is constructed of resilient, round stainless steel rod. For the femur it is one-fourth inch in diameter. Its special features are a curved sled-runner-like point and a hooked head which faces the same direction as the curved point. The point guides the pin down the canal and the head prevents migration into the bone.

While this pin has been adapted to use in all of the long bones, for the sake of clarity we will apply it here only to the upper two-thirds of the shaft of the femur. In the lower one-third the trumpet-like shape of the medullary canal requires two pins driven upward from the condyles.

Application to Upper Two-Thirds of the Shaft of the Femur

The problem here is wide displacement of the fragments because of unopposed muscle pull, with the ultimate tendency to antero-lateral bowing. No special instruments are needed for the introduction or withdrawal of the pin.

Operation: The patient is placed supine upon the fracture table with both feet fixed to the traction pieces without marked traction. The fracture site is exposed by opening the hematoma through a minimal incision. Sub-

periosteal dissection is unnecessary. With the finger the surgeon identifies the fractured surface of the upper fragment. The prominence of the great trochanter is then identified.

To introduce the pin a point may be chosen at the superior surface of the great trochanter or on the lateral surface of the bone just below the great trochanter. Our preference at the present time is for the latter. It now becomes possible for the surgeon to form a mental picture of the axis of the upper fragment.

A small incision or stab wound is made over the point of entrance and a drill hole slightly larger than the diameter of the pin (one-fourth inch) is made in the cortex of the bone. This can be accomplished through the stab wound by making half-turns with the drill bit. Complete revolutions of the drill will cause fibers of the muscle and fascia to become entangled. The point of the pin is pushed through this opening obliquely, as near the long axis as possible. Little resistance is met until the gliding surface of the sled-runner point strikes the far cortex of the femur. The design of the point is such that unless the pin is introduced too transversely, the point will glide down the inner surface of the bone rather than penetrate the cortex.

When the pin has been driven a few inches, an x-ray checkup in both the antero-posterior and lateral planes assures the fact that the pin is following the channel of the bone. As the pin is tapped with the mallet it will be felt to tighten in the proximal fragment as it exerts three-point pressure—medial pressure by the point against the inner cortex, lateral pressure by the shank of the pin against the cortex below the drill hole, and medial pressure by the shank against the cortex just proximal to the drill hole.

The hooked head indicates at all times the direction of the point. It is not unusual to see the pin rotate on its long axis as the sled-runner point travels down the irregular contour of the medullary canal. The point can be guided by rotating the hooked head. The pin continues to be driven by the mallet until the point emerges at the fractured surface of the proximal fragment.

The proximal end of the lower fragment is grasped with the forceps or clamp. By angulation or traction and manipulation, the bone is realigned by the surgeon while an assistant taps the pin with the mallet, driving it a distance of one or two inches into the distal fragment. At this stage the longitudinal

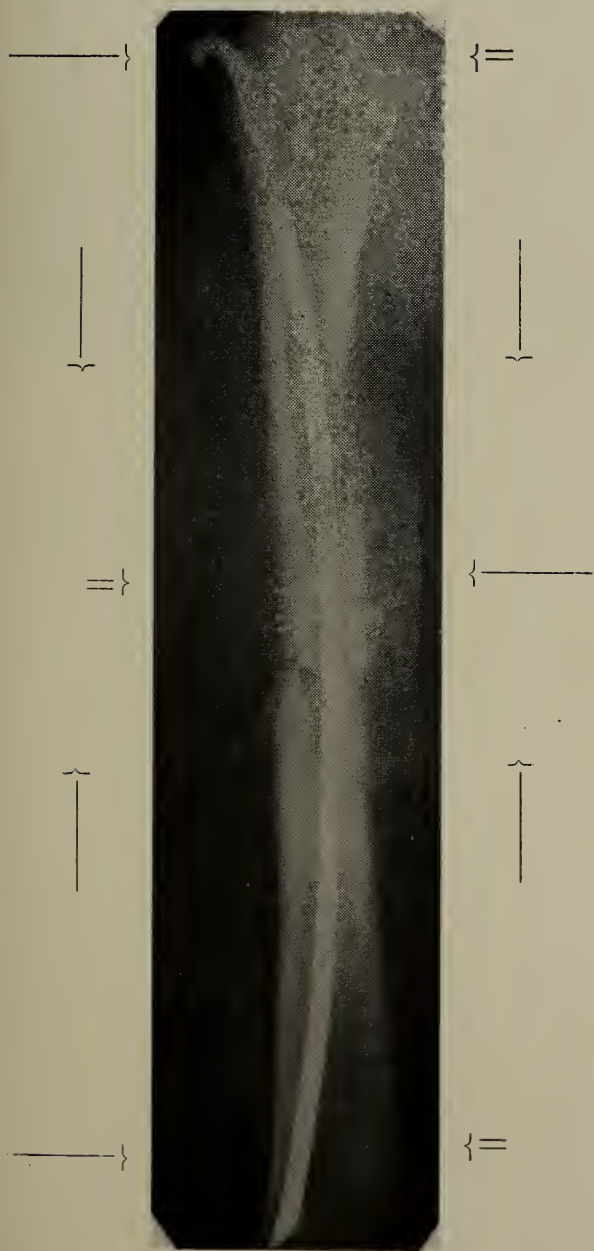


Figure 3. Anteroposterior view 8-weeks-old femur fracture showing spring principle of fixation. Three-point pressure is exerted by counter force of pin. Black arrows indicate direction of force exerted by bone due to muscle pull. Two-line arrows indicate direction of counter force exerted by pin.

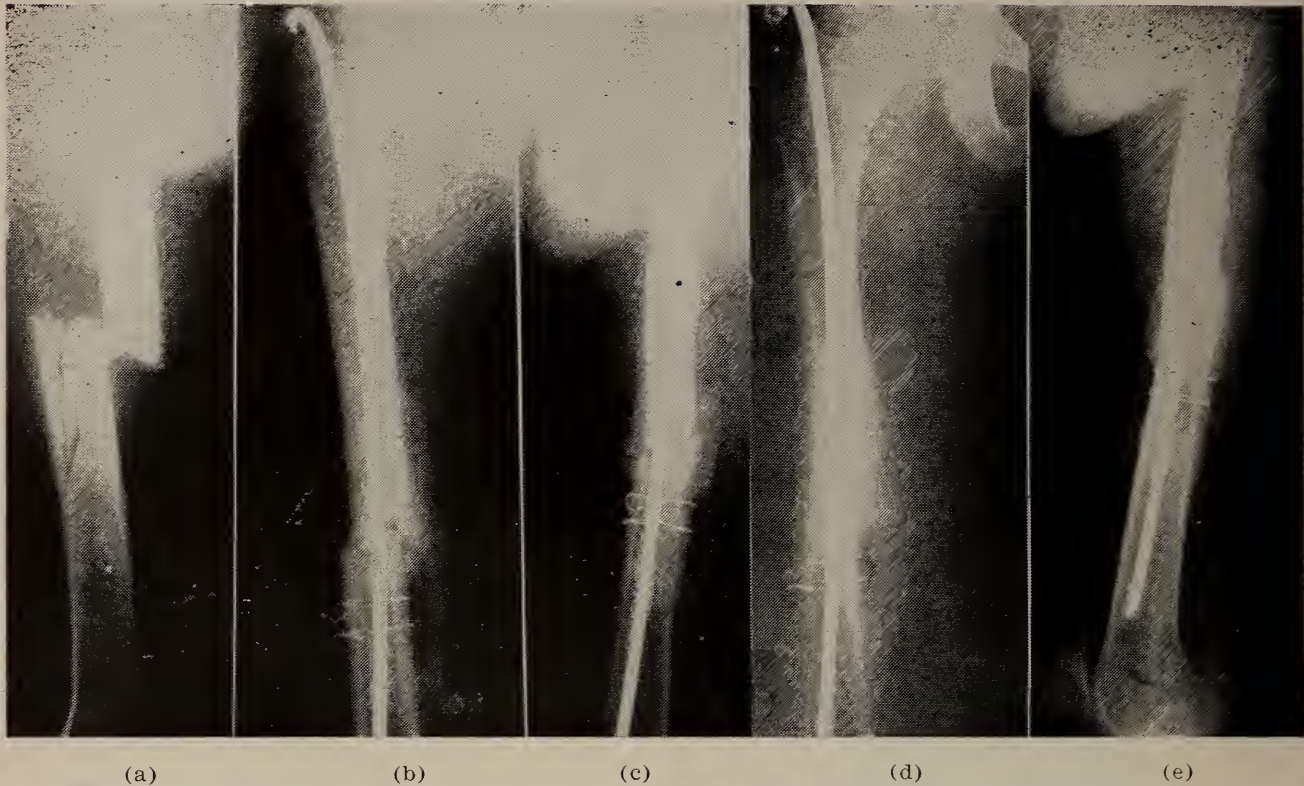


Figure 3. (a) Comminuted fracture mid-third shaft of femur.
(b) and (c) Eight weeks after pinning.

(d) and (e) Eight months after pinning.

Ambulatory at ten days. Full weight bearing at eight weeks with full range of motion.

and transverse pull of the muscles becomes very evident, resulting in firm compression of the bone ends. Using a narrow clamp the bone is perfectly aligned before the pin is completely driven in.

When the pin has been completely driven home the hooked head then lies beneath the soft tissues and firmly grasps the cortex of the bone, preventing axial twisting of the pain. The strong pull of the adductors against the lower fragment is now most apparent and fixation of the bone is found to be secure. In smooth fractures there might be some lateral play of the shaft upon the pin due to the discrepancy in size between the one-fourth inch pin and the size of the medullary canal. This play will disappear by the twelfth day.

Even should there be slight distraction of the fragments at the completion of the operation due to the relaxed state of the muscles, checkup x-rays twenty-four hours later will show snug contact of the bone ends.

A study of the postoperative films will reveal the mechanism of the fixation. Because of the muscle pull, particularly that of the adductors, the tendency of the bone is to bow laterally. In the passage of the pin down the canal, having been introduced into the bone

cbligely, the pin takes a moderate bend, bow fashion, with its convexity directed medially. The result then is that of opposing forces resulting in three-point pressure. The pin by its resilience utilizes the muscle pull to exert pressure medially in the mid portion of the shaft with a lateral force being exerted at both the hooked and pointed ends against the cortex of the shaft. This gives secure but not rigid fixation of the shaft, allowing the bone to glide upon the pin to accomplish the continuous contact compression which is desired. The physiologic pull of the muscles of the thigh is such that the compression force is constant, continuous, and uninterrupted, even though absorption of the bone ends should occur.

After-Treatment: The patient is kept in bed with the knee slightly flexed for ten days. An elastoplast bandage is applied from the toes to the groin, and upon this dressing external plaster splints are molded. This partial immobilization is considered wise to keep the soft tissues at rest until healing is well underway. The patient is permitted full freedom of the bed.

On the tenth day the sutures are removed, the patient becomes ambulatory on crutches,

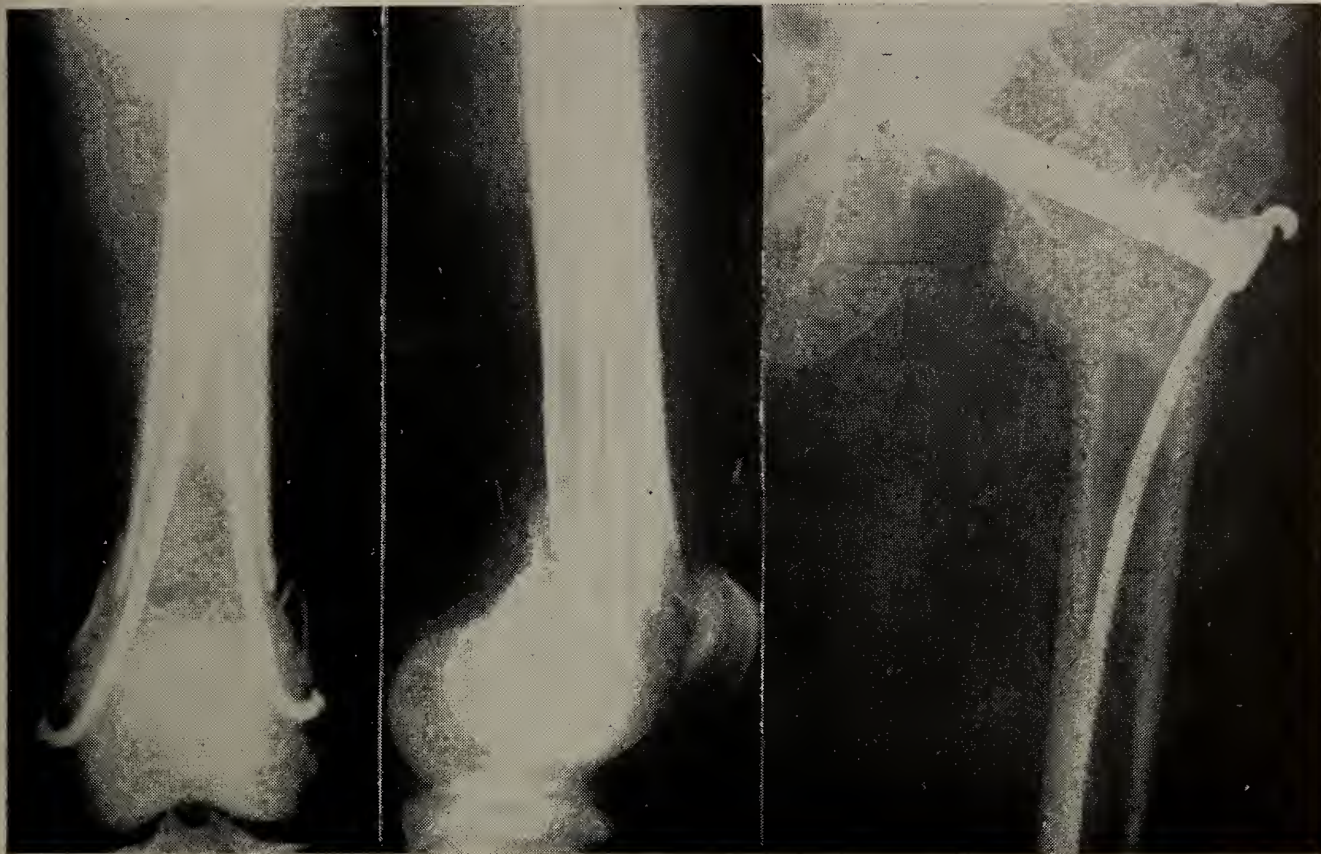


Fig. 5a

Fig. 5b

Fig. 4

Figure 4. The cross-pin principle, at times useful in fractures of the upper portion of the shaft. The value of the longitudinal pin is combined with that of a Smith-Petersen nail, fixing the two together by means of a sleeved head threaded into the proximal end of the Smith-Petersen nail.

Figure 5. (a) and (b). Antero-posterior and lateral views, lower end of femur, showing method of utilizing double pins for fracture of the lower third. In this instance fixation would have been more secure had the pins been introduced through a point a little lower on the lateral surfaces of the condyles.

and full function of the extremity is insisted upon with the exception of weight bearing. The patient is encouraged to tip the toe with each step and gradually increase the amount of pressure that is borne upon the injured leg.

By the sixth week full weight bearing is permitted, provided a good callus is present. It is usual to see evidence of callus within two weeks and a fairly large callus in six weeks.

When the pin has served its purpose it is removed, usually after the eighth month.

End Result Study

In the chart (Fig. 6) it will be noted that certain fractures in the trochanteric region have been treated by cross pins. This device (Fig. 4) utilizes a Smith-Petersen nail for the neck of the femur combined with a longitudinal pin for the shaft. This is accomplished by a sleeved head which is threaded into the proximal end of the Smith-Petersen nail, the pin being driven through this sleeved head axially

into the shaft of the femur, utilizing an oblique drill hole in the lateral surface of the shaft for its point of entrance.

In the reference to the diacondylar fracture of the femur, two curved pins three-sixteenths of an inch in diameter, which are, ordinarily used for the humerus and tibia, are driven upward into the medullary canal from points of entrance in the lateral and medial surfaces, respectively, of the femoral condyles.

Total Number of Femur Cases	19
Number of Fractures Comminuted	12
Number of Open Operations	15
Number of Closed Operations	4
Operations for Non-Union	3
Hip Spica Cast (original case only, 1938)	1
Fractures Trochanteric Region	7
Fractures Upper Third of Shaft	4
Fractures Mid Third of Shaft	4
Fractures Lower Third of Shaft	2

Function. Muscle atrophy and joint stiffness were negligible factors in all cases which were operated upon early, and in those cases which

FEMUR CHART.

Case No.	Location and Type	Age	Year	Operation	Time After Injury	Other Injuries	Other Fixation
1	Peritrochanteric Comminuted	35	1938	Open	8 days	....	Cast 7 wks.
2	Upper Third Comminuted	71	1940	Open	8 days	....	Boot Cast
3	Trochanteric and Subtrochanteric, Comminuted	28	1942	Open	2 weeks	Ligament damage, knee	2 screws hip spica
4	Subtrochanteric Comminuted	76	1945	Open	7 days	None Obese	2 screws
5	Transverse, Mid-Third	34	1945	Closed	Immediate	None	None
6	Transverse, Mid-Third	36	1947	Open	10 days	None	None
7	Transverse, Mid-Third	50	1948	Open	10 days	None	None
8	Trochanteric, Upper third. Comminuted (crush type)	59	1948	Open	Immediate	Extra-capsular fracture, neck	Skin traction 8 wks.
9	Subtrochanteric Non-union	23	1948	Open	3 mos.	Skull frac., opp. femur, tibia frac.	Circular wire, Moore Pin
10	Upper third Fragmented, Malposition. No union	35	1948	Open	9 wks.	None	Bone graft, Circular wire
11	Mid-Third Comminuted	20	1948	Open	4 wks.	Skull fracture, Meningitis	None
12	Lower Third Comminuted	46	1948	Open	8 days	None	Knee brace
13	Non-union midthird. Long oblique. Previous plating.	42	1948	Open	4 mos.	Osteomyelitis, frac. opp. trochanteric fracture	Transverse bolts
14	Mid-Third Comminuted	20	1948	Open	10 days	None	None
15	Trochanters Comminuted	71	1948	Closed	24 hrs.	None	Cross Pins
16	Trochanters, Upper Third Fragmented	78	1948	Open	6 days	None	Cross Pins, Circ. wires, traction.
17	Intertrochanteric	77	1948	Closed	8 days	None	Cross Pins
18	Jet. Upper-Mid Third Comminuted	22	1949	Open	8 days	Pelvis fracture	Circular Wire
19	Diacondylar Compound	38	1949	Closed	Immediate	None	Double Pins, Knee Brace

did not require prolonged bed rest or immobilization for other reasons.

Healing. In the trochanteric and condylar regions healing of the bone appeared to be neither expedited nor retarded. In the shaft, in all cases callus was quickly evident and healing appeared to be expedited. The three cases of delayed or non-union, one of which was grafted, healed very rapidly after pinning.

Deformity. No gross deformities occurred.

Moderate rotation of the lower fragment occurred in one case, a transverse fracture of the mid third of the shaft. In this instance a straight pin was used. This patient was a

feeble-minded man who remained in bed at home for two months after being ambulatory on crutches during his hospital stay. The weight of the foot produced the rotation. There appears to be little tendency to rotation when the patient is ambulatory and is actively using his muscles.

Mild angulation occurred in four instances. In one case a pin of improper metal was used. The metal was too soft, resulting in angulation within ten days, and later the pin fractured but a good result was secured. Mild angulation occurred in the lower third when one pin was used, driven upward from the

CRITICAL ANALYSIS OF FEMUR CASES

<i>Full Motion Begun</i>	<i>Muscle Atrophy</i>	<i>90° Flexion</i>	<i>Deformity Delayed Union</i>	<i>Full Weight Bearing</i>	<i>Pin Removed</i>	<i>Ultimate Result</i>
7 wks.	***	4 mos.	None	3 mos.	9 weeks	****
						
8 wks.	***	7 mos.	None	4 mos.	12 wks.	****
10 days	**	7 wks.	....	....	....	....
Immediate	*	10 days	None	3 mos.	6 mos.	****
10 days	**	3 wks.	Rapid union Rotation 15°	3 mos.	4 mos.	***
10 days	*	4 wks.	None	6 wks.	8 mos.	****
8 wks.	**	10 wks.	Slow healing. Delayed union of neck	6 mos.	10 mos.	***
10 days	*** *	6 wks.	Rapid healing	4 mos.	8 mos.	****
10 days	*** *	8wks.	Pin fractured, 8 wks. (?) Rapid healing. Sl. angulation		....	***
10 days	*	6 wks.	Rapid union	6 wks.	....	****
Immediate	*	4 wks.	Sl. angulation	6 wks.	6 mos.	***
10 days	**** *	9 mos.	Half inch shortening	6 wks.	10 mos.	***
10 days	*	6 wks.	Rapid union	6 wks.	....	****
Immediate	*	Immediate	None	4 mos. (?)	....	****
4 wks. intermittent	**	5 wks.	Slangulation	(?)	....	***
Immediate	**	Immediate	None	4 mos.	....	****
1 week	**	3 wks.	None Rapid union	(?)	....	****
2 wks.	*	10 wks.	Sl. anterior angulation	10 wks.	....	****

Figure 6

condyles in a comminuted fracture. It is believed that the use of two pins would have prevented this angulation.

In one badly fragmented fracture of the trochanteric region in the upper third of the shaft in an elderly woman, absolute fixation could not be secured, even with a cross pin. This patient was a poor risk and the wheel chair was permitted with intermittent skin traction. Mild angulation occurred at the trochanters. In the diacondylar fracture trans-fixed by two pins, fixation was excellent except that there was a tendency toward anterior

angulation because the pins could not secure sufficient purchase upon the lower fragment. A knee brace prevented deformity.

Complications. Good union occurred in all fractures pinned. There were no deaths, no infections, and no emboli.

Technical Difficulties. The greatest problem encountered has been that of securing the proper metal alloy for the construction of the pins. Specially hardened 18.12 Smo stainless steel appears to be the proper metal for the purpose. With proper heat treatment the alloy can be given a temper which permits both the

malleability and resilience that is required.

In one instance the pin could not be driven because the medullary canal was closed from a previous fracture. No difficulty has been encountered in removing the pin.

Conclusions

A method has been presented for treatment of fractures of the upper two-thirds of the femur. A new pin has been described for this purpose which utilizes the natural muscle pull of the thigh and the resilience of the pin for fixation. It is not considered necessary to use large rods or bars which completely fill the medullary canal. This method affords continuous and constant contact compression of the bone ends to stimulate osteogenesis.

A small bar one-fourth inch in diameter is felt to have sufficient strength for this purpose because full weight-bearing is not permitted until healing is well underway, while the return to function is almost immediate.

A cross-pin principle for the fixation of fractures in the region of the trochanters and a double pin principle for fractures of the lower third of the femur has been shown. Each long bone presents a separate and distinct problem. The spring-type fixation principle which has been described for the upper two-thirds of the shaft of the femur has been found to be

applicable in a similar fashion to all the long bones of the body.

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JOINT SESSION

The National Society for the Prevention of Blindness will hold a five-day conference in conjunction with the Interim Session of the Pan-American Association of Ophthalmology, March 26-30, 1950, at the Floridian Hotel, Miami Beach, Florida.

Details concerning the program may be obtained by writing directly to the National Society for the Prevention of Blindness, 1790 Broadway, New York 19, N. Y.

Hypertension—Its Medical Management*

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It is generally conceded that blood pressures above 140 systolic and 90 diastolic definitely place one in the hypertensive level¹. Due consideration, however, must be given to abnormal elevations of systolic pressure found in arteriosclerosis, aortic regurgitation and hyperthyroidism in which conditions, however, the diastolic pressure will not be found to be elevated.

The following general observations have been made on blood pressure: Systolic blood pressure falls from 5 to 40 mm. soon after assuming the erect position only to regain or exceed its normal level after about a half of a minute. In sleep pressure usually falls somewhat with the slowing of the pulse rate. The pressure usually rises during the course of the day, being 15 to 20 mm. higher around six o'clock than it was at the beginning of the day. Emotion either expressed or repressed, causes considerable rise in pressure usually. Muscular effort usually causes considerable rise in systolic pressure. Diastolic pressure sometimes is decreased by moderate and increased by severe exercise. Eating usually increases pressure slightly. Alcohol may cause significant reduction of pressure during deep intoxication. The effect of tobacco on pressure varies with the individual. Obesity is usually associated with increased readings and weight loss in otherwise normal individuals is nearly always associated with the lowering of the blood pressure. In warm weather blood pressure is usually lower and it is well known that the environment of a physician's office or clinic produces marked elevation at times².

Since the scope of this paper will be limited to essential hypertension I have adopted Stroud's classification of four stages consisting of the 1) potential stage, 2) the spastic stage, 3) the intermediate stage and 4) the sclerotic stage. In the potential stage the pressure is frequently found to be normal to slightly above but the response to environment, activity and stimulation is excessive. In the spastic stage the blood pressure is continuously high although it may vary considerably but

usually responds very well to vasodilating drugs. In the intermediate stage the diastolic pressure has a tendency to remain elevated and changes in the vessel lumina are beginning to take place. In the sclerotic stage the diastolic pressure is usually well fixed at 120 or more and the arterial changes are readily revealed by examination of the retinal vessels and embarrassment of the heart and kidneys has taken place to such an extent that medical treatment is very discouraging.

Before treatment is instituted a thorough assay of the patient should be made to ascertain properly the primary nature of the disease and determine the stage that it is in. Such procedures as intravenous urography, x-ray examinations of the chest, kidney function test such as urea clearance test, Fishberg's concentration test and the reaction to cold pressor and the sodium amytal test are all helpful. Periodic observation of the retinal vessels is a procedure that should be carried out.

Regardless of the pathogenetic factors, whether they be neurogenic, humoral or renal, in hypertension, all workers seem to agree that the immediate mechanism is one of arteriolar spasm. Therefore, until such time arrives in which we know the answer to this problem, our best results in the control of the disease and prolongation of life is by relieving the spasm. At present our best success is attained by the following approach; control of emotional factors; regulation of work and diversion; limitation and control of salt intake; reduction of body weight when obesity is present, and in general avoidance of excessive food intake particularly the overeating of protein foods; the insuring of proper rest; and the use of drugs for sedation and vasodilation. To this I add the rice diet of Kempner⁴.

This diet has several features. It is low in salt content, containing only 200 mg. of the chloride ion and 150 mg. of the sodium ion. It contains only 5 grams of fat and about 20 grams of protein, and about 450 grams of carbohydrate. Essentially it is ordered as 300 grams dry weight of rice daily, cooked with plain water and fruit juice and white sugar

*Read before the Section on Medicine at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949.

or dextrose in sufficient quantities to make up the required amount of calories for the particular individual being treated. Most workers attribute its effectiveness to its extremely low salt content. However, Kempner⁵ claims that the diet compensates a renal metabolic dysfunction because of its low fat, cholesterol and protein content. This diet must be supplemented by a daily ration of vitamins and additional iron intake, and when the diet is maintained for a prolonged time the plasma protein and urea nitrogen levels must be periodically observed, particularly in the critically ill patient. However, Kempner points out that on this diet protein nitrogen loss is less, urea nitrogen excretion is less and blood urea nitrogen is much less apt to rise when compared with the findings in the fasting individual. In addition the level of plasma protein and hemoglobin are surprisingly well maintained. There is a significant reduction in the blood cholesterol level which is commonly high in hypertensive diseases and arteriosclerosis.

For the past year or two I have been following somewhat the following plan with varying success. For the potential and spastic stages: A thorough study of emotional strain, tension state, anxieties, and stresses brought on by social and economic problems is made and efforts at correction instituted. The individual is then impressed with the necessity of and directed how to relax and live without undue strain. Periodic vacations and recreation are instituted; and relief of tension is secured by the use of phenobarbital. If the individual is overweight a dietary regimen is instituted to correct this, and at the same time he is taught to eat foods of relatively low salt content. In the spastic stage it is frequently necessary to add vasodilating drugs. For the past year I have been using veratrum viride in sugar-coated tablets, in varying dosage from 20 to 40 'crow' units per day. In the very exceptional case I find that the occasional switch to potassium thiocyanate gives results that are not obtainable otherwise. However, I never leave a patient on this drug for any length of time and do not advocate its general use. The technique of its usage and the toxic manifestations are too well known for me to enumerate here. Lately I have added rutin to the armamentarium although I am not sure how much value this has achieved. In the intermediate and sclerotic stages, in addition to the above regimen, I also add bed rest or marked limitation of activity, depending upon the condition

of the individual; and Kempner's rice diet. As mentioned above these cases must be observed closely, particularly for increase in blood urea nitrogen and maintenance of nitrogen balance. Occasionally it is necessary to modify the diet by addition of protein. This is readily done by the addition of dialyzed milk such as Mead's Lonalac. Where congestive failure exists in addition to the above procedures, it is well to institute a preliminary course of desalting by means of ammonium salts and mercurial diuretics. Not infrequently digitalization is necessary.

Finally let us be reminded that though these cases are frequently discouraging yet much can be done to prolong their lives and reduce morbidity.

Discussion

Dr. Gayden Ward (Jackson) — Essential hypertension, similar to all disease entities the causes of which are obscure, tends to progress as time and age advance. Also, the question of what constitutes a normal blood pressure has never been answered. Abnormal elevations of blood pressure may persist for years in a minimal degree without producing symptoms or disability, and more severe elevations of blood pressure may respond to medical management and remain under control in a similar manner.

We are all familiar with the hereditary factor in hypertension, and whenever a member of such a family presents signs of early potential hypertension with vasculating blood pressure readings, the problem and its ultimate possibilities should be placed before this patient and his life and activities directed in such a manner as to eliminate the factors which might precipitate a fixed elevation of blood pressure. Little or no interest has been centered on the early or potential hypertension, in spite of the definite preponderance of evidence that heredity plays a part in the causation, and that hypertensive children have been found. From a recent report of one of the leading medical schools, it was revealed that one in every five or six students in this age group has some evidence of early arteriosclerosis.

Treatment may be classified as: **expectant**, **physiologic**, and **palliative**.

Expectant treatment consists of early detection of the disorder and the outlining of a program of living. These hyperreactive persons should be warned against excessive smoking, the use of drugs and food substances

which are likely to aggravate vasoconstriction or produce sodium retention. Here is the place where good dietary régime should be started and the patient made aware of the dangers, not only of obesity, but even a moderate amount of weight increase. Intemperate use of foods high in sodium and caffeine should be avoided. It is much more reasonable for the patient to learn these time-honored facts and to begin to live the life of a hypertensive, rather than to make an abrupt change years later when the habits have become more fixed and the hypertensive state more advanced.

The physiologic type of treatment consists of the well-known orthodox medical measures. These have been discussed by the author, and consist principally of the currently popular rice and low-sodium diets, the administration of vasodilator drugs when indicated. In this particular capacity, I have been disappointed in most of the highly popularized and insidiously advertised drugs. At present, I am employing only sedation, particularly the barbiturates, in small divided regular dosages and have found them the most valuable single group of drugs. The amount of sedation should be given in sufficient quantities to abolish nervousness, restlessness, and the tremendous urge for activity which is so common in these patients. It should be given in doses small enough to prevent drowsiness and retarded mental reactions, and should be interrupted for short periods of time. During periods of unusual stress and tension, in which headaches and hypertensive encephalopathic symptoms are in evidence, the potassium thiocyanate has proved effective. It should be emphasized that this drug is reserved for these crises, and is only useful in relieving the symptoms at such a time, and should never be given continuously.

Many physicians, I am sure, have relied upon other measures, such as veratrum viride, papavarine, and I am sure that one is probably as effective as the other. But by personal preference, I have used potassium thiocyanate. This drug should not be used without proper blood level determinations and without awareness of its toxic effects.

The surgical treatment of essential hypertension has been accepted by the profession as a therapeutic measure to be employed when the disease proves resistant to the expectant and physiologic measures, and is at the present time a palliative one. The question of selection of patients for this procedure, and the

advisability of its acceptance in any case of hypertension is still a controversial and too extensive a subject to be discussed at this time.

Several of my patients have been submitted for sympathectomy, and I truthfully believe that some are living today who would not have survived on medical management. Conversely, while the blood pressure readings have been improved, in another group these patients are no more comfortable. Before patients are selected and submitted for surgery, a careful evaluation of the entire patient must be made, and probably re-examined in six months or a year, before a final decision is made.

Just how early in the development of hypertension surgical treatment should be advised is a question being seriously considered in medical centers interested in this problem. Also, the question of how extensive the early operations should be is being considered, as the possibility of more conservative operations in the early stages of the disease and more radical procedures in the later stages has received more than the usual amount of thought and discussion.

As Grimson has stated, "The lowering of the blood pressure following sympathectomy has been directly proportional to the extent of the sympathectomy and inversely proportional to the severity of the disease."

Dr. Seale Harris (Birmingham, Ala.)—The essayist treated the subject in a very rational manner. The methods of treatment are excellent. I am frank to say the rice treatment, not to condemn it, but to confirm it, is too very severe a treatment. When the patient is in the hospital I have seen a great many cases that get off the diet. I like the old Allen salt treatment . . . the fruits and juices and that sort of thing. I think they make more liberal diets and get just as good results by rest, regulated diet, and one drug—magnesium sulfate. If it sold for \$50.00 a pound it would be used more. I have used it for years. The best doctors of all times have been those who regulated the lives of their patients, restored them to health and maintained it. The treatment of hypertension is essentially regulating the lives of patients. The age has nothing to do with blood pressure. Certain diseases come on in old life that cause a rise in blood pressure. There are two types of hypertension . . . one neurogenic type in which the diastolic will range 80 or 90, the other to 170 or 180 . . . vary very much according to emotional dis-

turbance. Regulate their lives with low calorie diet, exercise. As to the essential type of hypertension there are many causes. One case: a man operated for gallstones at thirty-five years; another suffered severe pain in back, blood pressure over 300. We suggested this man had some humoral disturbance and sent him to Johns Hopkins. Dr. Hugh Young removed a kidney. His blood pressure is 135, because cured it was by surgery. I am sure there are many cases in which the kidney is a factor.

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Present Day Status of Multiple Sclerosis*

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ALTHOUGH the syndrome of multiple sclerosis has been recognized for well over the last hundred years, the etiology and effective treatment of this disorder have thus far remained elusive.

Until 1835, when Cruveilhier described the condition as "grey degeneration," this disease was considered as one of the spinal paraplegias. Three years later Carswell, an English medical student, described and sketched the spinal cord and pons of a far advanced case of disseminated sclerosis. About 1856 Frerichs made the clinical observation that the disease ran a course of exacerbations and remissions, that the disturbance of movement far outweighed that of sensation, that sclerosis of the central nervous system is more frequent in the young and that the general nutrition remained undisturbed for a long period. These observations in the light of our present day knowledge of multiple sclerosis were both accurate and astute.

Charcot and Buschard, in 1862, clarified the conception of the syndrome and accepted the triad of signs—namely nystagmus, scanning speech, and intention tremor—as cardinal evidences of the disease. In reviewing a large

series of cases of multiple sclerosis, Charcot's triad in itself is seen but rarely and consequently is wholly inadequate in establishing the diagnosis. Charcot's contributions, however, have been invaluable and he was the first to point out that the axis cylinders of nerve fibers were relatively immune from the sclerotic process.

Oppenheim was the first to stress the sensory involvement in multiple sclerosis. Strumpell described the nature of the reflexes and emphasized the disappearance of the abdominal epigastric responses. Uthoff, in 1889, explored the details of the eye symptoms, more especially retrobulbar neuritis, and demonstrated the various types of scotomata and contractions in the visual fields.

Disseminated sclerosis is no respecter of persons; it has been found to occur approximately equally in all social levels in life, as well as equally in the two sexes. Likewise, occupation appears to be unimportant as determining factors in the disease. Heredity and familial factors are apparently of little consequence although sporadic case reports of both involvements appear in the literature. These are so rare that no definite conclusions can be drawn. While negroes are not immune to multiple sclerosis, the incidence in the Caucasian race is by far the highest. Some authors have stated that Finns and Swedes were inclined to develop multiple sclerosis.

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In 1921, Davenport¹, in discussing the geographic distribution of multiple sclerosis, reported that the highest morbidity in the United States occurred in Michigan, Minnesota, Wisconsin and Washington. More recently, Ulett² reported from statistics gathered from individual neurologists and hospitals, that the incidence of this disease is greater north of the 37th degree of latitude. In a yet unpublished survey, Limburg³ has found this disease to occur chiefly above the 40th parallel. He also estimates that there are at least 50,000 cases in the United States at any one time.

The incidence of multiple sclerosis in the British Isles and northern Europe is known to be higher than in the United States.

Although no direct correlation has been illustrated, it may be significant that multiple sclerosis, goiter, undulant fever and rheumatic fever occur in approximately the same geographic locations.

It is interesting to note that the incidence of multiple sclerosis varies inversely with the amount of recorded sunshine in various parts of the United States.

Statistical studies indicate that the disease is on the increase. This inference may be inasmuch as diagnoses are made more accurately today and at an earlier phase in the disease process. The establishment of AARMS (The National Multiple Sclerosis Society) has served to focus the attention of both lay and profession personnel on this baffling disorder. Limburg³ has determined the mean life expectancy of multiple sclerosis patients to be twenty-seven years from the time of onset.

Multiple sclerosis occurs at practically all age levels. Statistics compiled by Wilson indicate that the process is more apt to commence between the ages of twenty to thirty, between the ages of thirty and forty; next, between ten and twenty; and then, between forty and fifty. It is relatively uncommon below the age of ten and over fifty.

The basis of any thorough understanding of a disease process, or the successful treatment of a clinical entity, is contingent upon knowledge of the etiologic factors. To date, the etiology of disseminated sclerosis is unknown. Infections of either bacterial or virus origin, toxins, disturbance in lipid metabolism, allergy, vascular thrombosis, vasospasm and purely psychogenic aspects have been promulgated as possible causes of multiple sclerosis. Many of these factors are not mutually exclusive; in fact, there are indications that

vascular disturbances may be based on allergy to some organism, or that the vascular disturbance may result from an infectious process or even be enhanced by psychogenic factors. The recent observations of Kyger and Haden⁴ may prove to be significant.

In a well controlled series of skin tests they found that 100 per cent of 55 multiple sclerosis patients reacted positively to polyvalent and anti-brucella serum and to anti-abortus serum and that 97 per cent of 118 patients reacted positively to killed *Brucella* organisms.

The effects of trauma, general physical illness, pregnancy and emotional factors on multiple sclerosis are controversial. Injury has occasionally been declared responsible for its onset. It is our opinion however, that the disabilities of the disease are the direct causes of the accidents seen in these patients. If trauma is to play any role in the precipitation of an attack of multiple sclerosis the injury would necessarily originate in either the head or spinal cord. Many patients attribute the onset of their disseminated sclerosis to some incidental physical illness such as a cold or other infection. While such disorders could be a factor, it is unlikely that they are significant in the causation of multiple sclerosis. Regardless of the contribution of incidental infections to this disease, it is wise to eliminate all possible foci of infection in the treatment program.

There is little doubt but what emotional conflicts will aggravate a preexisting disseminated sclerosis. In treatment, attention should be given to the management of the emotional factors. Certain psychodynamic enthusiasts have ventured the opinion that there is a more or less typical personality profile in patients who have multiple sclerosis. As yet these adherents have not explained the geographic distribution of the disease, one of a number of discrepancies in their arguments.

Needless operations, lumbar punctures, and anesthetics should be strictly avoided in the management of multiple sclerosis cases as there is good reason to suspect that such procedures serve to aggravate the basic process.

Prompt and early recognition of multiple sclerosis although often difficult, is of paramount importance to the success of the therapy regimen. The same emphasis that is applied to the early detection and treatment of cancer is applicable in the case of multiple sclerosis. The initial signs and symptoms of this disease

may stimulate the early manifestations of many neurological disorders, eye diseases and even psychiatric derangements. A careful and complete history is of utmost value. In many instances the history itself is of more importance than a current neurological examination. The search for possible clues should include scrutiny of transient ocular disturbances of the past, the temporary occurrence of paresthesias or sensory involvement of a part or parts of one of multiple extremities, transient disturbances of movement and alterations in vesical control even though these changes may have been prevalent for months or years prior to the present complaints. In the absence of a suggestive history one must rely on the results of a careful and complete neurological examination to formulate an opinion. Eye consultation, plus spinal fluid studies often aid greatly in the establishment of a diagnosis.

Analysis of the neurological signs and symptoms reveals that in general the newest accessions of neurological functions such as epicritic sensation, pyramidal tract function and neocerebellar control are affected by the pathological process much earlier than the phylogenetically older acquisitions such as extra pyramidal functions, protopathic sensation and axial cerebellar control.

It is impossible to describe a typical case of multiple sclerosis. The signs and symptoms vary widely in individual patients and rarely does one encounter cases of a similar nature.

Involvement of the corticospinal pathways gives rise to such signs and symptoms as increased deep muscle reflexes, positive Hoffman and Babinski reflexes, weakness, stiffness, spasticity and easy fatigability of the extremities and diminution or loss of the abdominal reflexes. Disturbances of the abdominal reflexes, while a common observation, are not to be considered of major importance. Obesity, pregnancies or mechanical interruption due to surgery often render these reflexes inactive.

Cerebellar dysfunctions appearing in multiple sclerosis are characterized by such symptoms as major and minor ataxia, cerebellar forms of dysarthria and nystagmus.

Nystagmus may be of the horizontal or vertical variety or it may be so fine as to be barely detectable by the naked eye. In some patients a fine rhythmical quivering of the optic fundus may be observed during ophthalmoscopic examination. This phenomenon has

been termed "jelly nystagmus" and according to Wilson, is virtually pathognomonic of multiple sclerosis.

Subjective sensory disturbances have been reported by many investigators to occur in approximately a third of the cases of multiple sclerosis. In our experience, subjective sensory disturbances have been encountered in a much higher percentage of the patients examined (approximately 60 per cent). The most common type of sensory disturbance is some form of dysesthesia of the acral portions of the hands and feet. This may be in the form of parasthesias or hypesthesias of the fingers or toes. The patient frequently complains of numbness or tingling or an inability to handle small objects with the accustomed degree of deftness. Occasionally other portions of the body may be involved also, by areas of hypesthesia or irregular distribution. Pain is an infrequent symptom in cases of multiple sclerosis and, when present, is usually the direct result of muscle spasm or of nerve root irritation. The phylogenetically-new gnostic, or epicritic sense is more frequently disturbed than is the phylogenetically-older protopathic sense.

The cranial nerves are likewise not immune to the pathologic changes seen in multiple sclerosis. Visual disturbances in the form of diplopia or blurring of vision are fairly common. A history of a transitory disturbance of such a nature may be of great diagnostic significance. This may persist for only a few days or weeks and then disappear without sequelae. Many ophthalmologists believe that a majority of the cases of retrobulbar neuritis is due to multiple sclerosis. Blindness is rare in this disorder and true hemianopsia is practically never encountered.

Diplopia is the result of imbalance of the extraocular muscles. Complete or partial involvement of the sixth cranial nerves is not uncommon. Likewise partial third nerve palsies are fairly frequent. Complete third nerve involvement is rare. Fourth cranial nerve palsies are practically never observed in multiple sclerosis.

The much-publicized temporal pallor of the optic disks cannot be considered as pathognomonic of this disease. In many normal disks the lateral portion is more clearly defined and is of lighter color than is the nasal half. Masclular fibers occupy the temporal portion of the disk. The scotomata observed in multiple sclerosis patients are usually located

in the muscular or perimacular area, hence the atrophy which ensues is found in that portion of the optic disk containing the involved nerve.

The seventh cranial nerve to the facial muscles may occasionally be affected. Vertigo and loss of hearing may also occur due to involvement of the eighth cranial nerve.

Trigeminal neuralgia in one or all divisions of the nerve is occasionally an accompaniment of multiple sclerosis. If the pain is typical of tic douloureux it is best treated by the preganglionic section of the sensory root of the fifth nerve.

Over one-third of the patients with this disease have various disturbances of vesical function including urgency, frequency, incontinence, and occasionally retention of urine. Constipation is a frequent complaint of these patients. Rectal incontinence may also occur.

Emotional changes occurring in multiple sclerosis are fairly typical. The patients frequently exhibit a relative euphoria and optimism out of all proportion to their degree of disability. Emotions become labile, poorly-controlled and unstable. Intellectual changes are usually negligible as compared to the affective changes and the intellect is almost always fully preserved. Insanity is not a common complication of multiple sclerosis. Occasionally psychoses in patients with this disease are reported but no causal relationship has been established.

Convulsive disorders while not frequent do occur in multiple sclerosis. The seizures may be of the grand mal variety or focal in type. These convulsions can be adequately controlled in most instances by the usual anti-convulsant medications.

In approximately three-fourths of the subjects having multiple sclerosis, the course of the disease is characterized by remissions and exacerbations. These remissions may last several weeks or may continue for several years. In some patients, however, the disease seems to run a steady down-hill course unmarked by any sign of a remission. In a few individuals the disease apparently has an acute, rapid, fulminating course which may be fatal within a few days. Many physicians believe the last type to be a form of virus encephalomyelitis.

It is not our intention to consider in detail the differential diagnosis of multiple sclerosis. Extreme care should be employed in each suspected case to exclude other neurological dis-

eases. With our present day diagnostic armamentarium such as a complete history and neurological examinations, blood studies consisting of counts and complement fixation, analysis of the cerebrospinal fluid, study of the spinal fluid hydrodynamics, x-ray examination, pneumo-encephalography and electro-encephalography, there should be little difficulty in delineating this disease from other neurologic disorders. Considering the prognosis and limitations in therapy of multiple sclerosis one can readily visualize the necessity in segregating certain conditions which may be more amenable to treatment.

Considerable controversy exists concerning the exact detailed nature of the pathological changes in multiple sclerosis. There seems to be fairly uniform agreement that the most acute lesions are perivascular in distribution. Certainly there is a total disregard for anatomic landmarks and structural boundaries.

Direct examination of the central nervous system reveals patches of degeneration at times externally visible over the pons, medulla, and spinal cord. These areas appear greyish and semi-translucent and are sharply delineated from the surrounding white substance. They are waxy or gelatinous appearing when cut and are firm to palpation. While these lesions are found chiefly in white matter, they often invade the grey matter at random. The microscopic appearance of a given area depends upon the age of the lesion and upon the degree of degenerative change. In mild lesions, or at the borders of the more advanced ones, there is swelling of the myelin sheaths with the formation of globular enlargements. In still more advanced involvement the nerve sheaths are fragmented and the myelin is broken up by compound granular corpuscles. These areas may show perivascular lymphocytic infiltration. Even though the destruction may be extensive, the axis cylinders often remain preserved. In areas showing complete disappearance of myelin, only occasional axis cylinders remain. There is a variable increase in neuroglia which may be proliferated to the extent of forming a glial scar. It is of clinical significance that many axones may be found passing uninterruptedly, though demyelinated, directly through a glial scar. These axones may transmit impulses without interruption, this fact being responsible for at least partially retained function.

In reviewing the literature on multiple sclerosis one becomes overwhelmed by the

vast number of articles dealing with treatment. The variety of methods offered attest to the fact that as yet none has proved satisfactory.

Within the past few years several treatments based on the more recent theories regarding the pathological processes of multiple sclerosis have been suggested.

Tracy Putnam⁵ believes that multiple sclerosis patients suffer from a disturbance in the clotting mechanism of the blood. He has shown that demyelinating lesions can be produced by retrograde obstruction of cerebral venules. He believes that thrombi, among other changes, are regularly seen in acute lesions of multiple sclerosis in man and that it is entirely possible that the perivascular areas of demyelination and the resultant scarring may be the direct result of thrombi formation.

Adherents to this theory recommend that dicoumarin be given over long periods of time in order to prevent exacerbations of the disease. The optimum dosage of dicoumarin is determined by regular prothrombin time determinations. There are definite limitations to the scope of this treatment. The chief difficulty encountered in this form of therapy is that accurate prothrombin determinations must be available in order to prevent such complications as hematuria from overdosage of dicoumarin or insufficient dosage in which case the desired effect is not obtained. In certain cases we have seen hematuria or excessive menstrual bleeding occur even though the prothrombin time was within the optimum range. In our experience little improvement has been observed in either acute or chronic cases where dicoumarin has been employed.

Ferraro⁶ has championed another theory which is based on the analogy between the cerebral pathology of demyelinating disease, and that of cerebral anaphylaxis. Adherents to this theory have attempted to modify the sensitivity of the patients to various bacterial toxins or to other substances for which intradermal skin tests have been positive. Benadryl and pyribenzamine hydrochloride appear to have been of value in some cases.

Franklin and Brickner⁷ have given convincing evidence that vasospasm of the retinal vessels occurs in multiple sclerosis patients while they are having transient scotomata and that vasodilating drugs eliminate both the areas of vasospasm and the scotomata simultaneously. They postulate that lesions of mul-

multiple sclerosis result from, or are associated with, vasospasm, that scotomata in multiple sclerosis patients are the result of vasospastic lesions in the retina, and that similar disturbances also occur in other portions of the central nervous system. The suddenness of onset and the brevity of duration of some of the symptoms can be explained easily by this hypothesis.

Those authors further speculate that the fixed lesions result from a vasospasm either more complete or of longer duration than the vasospasm responsible for the reducible symptoms. The reducible symptom is interpreted as a consequence of transient or incomplete spasm which permits the passage of sufficient blood, promptly or swiftly enough, to preserve the life of the tissue but which, nevertheless, impairs function. The dilation of the vessel by the drug permits the reestablishment of normal nutritional conditions and the disappearance of the reducible symptom. These vasospastic lesions may be the allergic response of the vessels to certain bacteria or toxins. Putnam's thrombi could be secondary to stasis associated with prolonged intense arteriolar spasm or to internal injury when the spasm involves the venules. The precipitation of sudden attacks of symptoms by excessive heat or cold may indicate that some of the vessels can become constricted by reflex action.

Several treatments directed toward improving the blood supply to the central nervous system are now being used with varying degrees of success. Probably the most widely used is the intravenous administration of histamine which was begun by Horton and his co-workers⁸.

Histamine diphosphate can also be administered subcutaneously. A fair degree of vasodilatation can also be produced by the use of papaverine hydrochloride, syntropan in combination with aminophylline and nicotinic acid. The chief objection to the use of these preparations is that the effect is of too short duration.

Recently Lyons⁹, et al, have demonstrated that tetraethylammonium chloride is capable of relieving vasospasm in man by blocking the autonomic ganglia. This drug has been used extensively during the past three years in the treatment of vasospastic disease of the peripheral vascular system. For the past year and a half it has been used in the treatment of ambulatory multiple sclerosis patients at

the Cleveland Clinic¹⁰. Each patient is given an initial intramuscular injection of 400 mg. of tetraethylammonium chloride into the upper outer quadrant of the gluteal muscles, then is allowed to remain in a supine position for one hour. An orthostatic hypotension ensues which then diminishes sufficiently during the hour to enable the patient to walk about without discomfort. If no dizziness, nausea, pallor or syncope develops within five minutes after the patient stands erect he is allowed to depart with the admonition that he sit down promptly if such symptoms seem imminent. At each subsequent treatment the previous dosage is increased by 100 mg. until the patient is unable to tolerate a larger dosage without increasing the allotted time for his recuperation. Such treatments can be given six times each week for several months without ill effects other than some gluteal tenderness which may be relieved by local applications of heat.

Patients vary widely in the amount of the drug which they can tolerate on an ambulatory basis. Among our patients the dose has varied from 400 to 1700 mg. in women and from 700 to 2000 mg. in men. Tetraethylammonium chloride seems to have little effect on the chronic longstanding symptoms of multiple sclerosis, the residuals of previous attacks, but it does seem to produce a prompt remission in most patients who are having acute symptoms due to a recent exacerbation of the disease.

During the past year and a half we have treated approximately 300 multiple sclerosis patients by this method. We believe it to be the best method of treatment we have used. A majority of the patients with an acute relapse apparently begin definite improvement within three to five days after the start of treatment. We know by now that relapses are neither completely cleared nor entirely prevented by tetraethylammonium chloride but we do believe that its administration produces a definite and beneficial effect on most cases of the disease. Neither it nor any other drug apparently has any effect on the steadily progressive non-remissive type of multiple sclerosis.

Here, as with other treatments designed to improve circulation, the main obstacle rests in achieving a more or less permanent vasodilatation. Since the tetraethylammonium effect probably does not persist for more than several hours we have attempted to augment this effect by the oral administration of Priscol.

As yet we have not had sufficient experience with this combined therapy to comment on its efficiency.

In addition to the above proposed methods of treatment extreme care should be exercised in general hygiene. Adequate diets supplemented by vitamins are recommended. Care should be employed in controlling both bladder and bowel functions. Colds and other infections should be avoided when possible as well as excessive chilling or over heating of the body.

Closely allied with these suggestions is the well-established custom of advising each patient to move to a place south of the Mason-Dixon line, or, at least, to visit such a location during the coldest six months of the year if possible. Many neurologists believe that patients have attacks of multiple sclerosis less frequently when they are in the South than when they remain in the North.

Physical therapy serves an important role in the management of multiple sclerosis patients. Hydrotherapy, massage, muscle exercises and muscle training are particularly helpful in the chronic cases.

Psychotherapy whether given by the family physician or by a psychiatrist is of definite value in the treatment of disseminated sclerosis. Reassurance by the physician can aid greatly in relieving the patient's anxiety. There has been considerable controversy as to the attitude the physician should assume when telling the patient about this disease. Some physicians consider it unwise to inform the patient about his illness, preferring to take much the same approach to the problem as they do toward cancer. Of course, when one deals with the human equation it is impossible to establish any hard and fast rules as to the psychological approach. We believe that in most instances it is better to inform the patient as to the nature of his illness. Few intelligent patients are kept in ignorance these days, especially when publicity regarding medical problems is so widespread. Without adequate explanation many patients develop an increased amount of anxiety. As stated previously, a thorough discussion with presentation of the brighter prospects can achieve much in lessening the worry and tension and building morale so that the multiple sclerosis patient will be better equipped to live with his handicaps. These patients are not immune to developing deep-seated emotional conflicts and when present they will best be handled by psychiatric treatment.

Even though the etiology of multiple sclerosis remains obscure and the treatment inadequate, it is encouraging to report that much investigation is now in progress. The crux of this problem resides in the term multiple. We know that the pathological changes are multiple and it is reasonable to speculate that the cause and treatment will likewise be multiple.

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The Essential Clinical Considerations of Carcinoma of the Rectum*

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CARCINOMA of the large bowel accounts for approximately 8 per cent of all major carcinomas, and approximately half of all carcinomas of the large bowel are located in the rectum. By the time the first symptom of rectal malignancy has manifested itself—and first symptoms are almost invariably such as to direct the attention of both patient and physician to the rectum—85 per cent of all growths can be demonstrated by digital examination, and practically 100 per cent can be visualized through the proctoscope or sigmoidoscope. All the circumstances, therefore, seem favorable for ready diagnosis and prompt treatment. Yet five-year survival is not fre-

quent. The natural tendency of the disease is toward death. Of the 1,315 persons with cancer of the rectum studied by Greenwood¹, 1,000 were alive at the end of the first year of illness, but by the end of the second year only 571 were alive, by the end of the third year only 280, by the end of the fourth only 150, by the end of the fifth only 71, and by the end of the sixth only 39. In the eleven-year survey of carcinoma of the rectum in Connecticut recently reported by Ottenheimer², five-year cures were obtained in only 7.9 per cent of the cases observed in the period 1935-1940 and survivals in resected cases amounted to only 16.1 per cent.

Carcinoma of the rectum, therefore, is both sufficiently frequent in occurrence and sufficiently lethal in consequences to justify, and indeed to make obligatory, periodic consideration of this subject. My remarks are based

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upon my personal experience perhaps extensive enough to permit me to arrive at certain definite conclusions which I believe are of practical importance.

Diagnostic Considerations

It is not intended to enter upon any consideration of the anatomy and physiology of the rectum. It should be emphasized again, however, that those who undertake to treat carcinoma of this organ must be thoroughly familiar with both. For that matter, the statement is a generalization which should be applied to every surgical disease. When we take from the art of surgery the truths of anatomy and physiology, we deny ourselves the firm foundation upon which all surgical therapy should be based.

The diagnosis of carcinoma of the rectum is intimately related to the regional anatomy and physiology. The clinical history usually secured in the disease can be anticipated by a recollection of anatomic and physiologic facts. Cancer of the rectum is almost always accompanied at one time or another, and frequently as a first manifestation, by a change in bowel habit, by the occurrence of tenesmus, by the feeling that even after copious defecation the rectum has not been fully emptied, by the presence of bright red blood in the stools, or by what, for lack of a better term, has been called "bowel consciousness."

The appearance of any single one of these symptoms, or of any combination of them, should promptly arouse the suspicion of carcinoma of the rectum, and the presumptive diagnosis should not be dismissed until the possibility has been excluded by exhaustive examination and testing. Loss of weight and of strength are frequently though not always associated. These manifestations, together with dyspepsia and anemia, are more characteristic of carcinoma of the right half of the colon or of the stomach than of carcinoma of the left half of the colon or of the rectum. Other points of clinical differentiation are that carcinoma of the right half of the colon is seldom obstructive, while carcinoma of the left half usually terminates in obstruction, and that carcinoma of the rectum is seldom actually occlusive but is more likely to be characterized by vague rectal discomfort.

The manifestations just listed are present alone or in combination in practically every instance of carcinoma of the rectum. They are not, however, always elicited. I should hesitate

to emphasize the obvious fact that a complete history is necessary in every case except that so often such a history is omitted. I am constantly surprised, in fact, to find that even in teaching hospitals a comprehensive investigation of every patient cannot be taken for granted.

A complete history must be followed by a similarly complete physical examination. Again the warning is obvious, but again it is surprising how often patients, even those in middle life and beyond, although they are told that they have been studied completely, will be found to have had only the most casual inspection of the anus if indeed they have had that, and to have had no examination at all of the terminal bowel.

A rectal examination can give rise to a great deal of pain and discomfort and can offend the patient's natural modesty if it is improperly performed. It can also, in the absence of a proper environment, supply little information and even be completely misleading. Certain details concerning its performance must therefore be mentioned.

The first essential of a proper rectal examination is correct position. An examining table which permits the inverted position is extremely useful, but if it is not available the knee chest position, or the right or left lateral position, with the knees flexed on the abdomen, is entirely satisfactory. The second environmental essential is correct lighting, for inspection as well as palpation is important.

The examination can be conducted without undue exposure and should be so conducted that it gives rise to no pain and to only minimal discomfort. The buttocks are gently separated and the perianal and anal tissues are inspected for possible fissures, fistulas, and external or prolapsed hemorrhoids. The finger, well lubricated with KY or some other jelly, is then gently inserted through the anus, the patient first having been told exactly what is to be done. The digital examination of the anal canal and rectal canal is carried out slowly, thoroughly and systematically. Ordinarily from 7 to 10 cms. of the rectal canal can be palpated, but if the cooperation of the patient has previously been obtained, and if he will gently strain during the examination, it is frequently possible to palpate another 2 or 3 cms.

If the proper examination is made, eight out of every ten carcinomas of the rectum can be demonstrated so definitely by digital examina-

tion that even a physician of no great experience can make the diagnosis. The typical lesion, which can be located in any area of the canal, is hard and indurated, and blood is frequently observed on the examining finger as it is withdrawn.

Endoscopic Examination: Anoscopic, proctoscopic or sigmoidoscopic examination is carried out according to the indication of the special case. Endoscopy should not be omitted in elderly persons, or in patients in whom any doubt of the diagnosis exists. It is far better to err on the side of unnecessary studies than to omit examinations which should be made.

Frequently endoscopic examination can be made immediately after the digital examination without special preparation, a highly desirable turn of events if the circumstances are propitious. If they are not, the patient is instructed to take a purgative, followed by cleansing enemas, and to return promptly for the remainder of the examination. It is immaterial what special instrument is used for the investigation. What is essential is that it be sufficiently long for complete examination of the rectal canal, that illumination be adequate for inspection, and that a suction pump and the simple equipment for taking a specimen for histologic examination should be immediately available. The instrument should be thoroughly lubricated, all manipulations should be gentle, and the examination should be carried out systematically. If a lesion is identified, it should be determined whether or not the contiguous intestinal wall is fixed, and the section for biopsy should be removed from a carefully selected area.

Roentgenologic Examination. Roentgenologic examination of the rectum contributes nothing in itself, but in all suspected cases of carcinoma of the rectum it is well to study the entire large bowel by barium enema. For one thing, the mere presence of a malignant lesion in the rectum does not exclude the presence of a second lesion in a more proximal area of the bowel. For another, it is important to determine whether polypi are present. Such growths in the rectum can be demonstrated by palpation, but those in the large bowel can be detected only by barium enema. Polypi are always potentially and sometimes actually malignant, and they should always be removed surgically or be destroyed by fulguration if they are found.

Laboratory Studies: Complete studies of the

urine; the blood, the serum protein values and the blood chemistry should be made in every case of carcinoma of the rectum. They contribute nothing, of course, to the diagnosis of the disease, but they are necessary for the evaluation of the general status of the patient, and therapy should not be instituted until these tests have been carried out and until such abnormalities and perversions as are found to exist have been corrected.

Therapeutic Methods

The categorical statement can be made that carcinoma of the rectum is a surgical disease, and that even in advanced cases the patient is better off with surgery than with any other variety of treatment. In the occasional case in which surgery, for valid reasons, cannot be carried out, deep roentgen-ray therapy or the application of radium may prove of value.

In the order of desirability, though by no means always in the order of possible performance, the treatment of carcinoma of the rectum may be stated to be:

1. Radical anterior resection of the rectum, with preservation of the sphincter.
2. Radical one-stage abdominoperineal resection.
3. Radical two-stage abdominoperineal resection.
4. Permanent colostomy with subsequent posterior resection of the rectum.

Simple colostomy has been deliberately omitted from the list of acceptable procedure. My own experience, which I think duplicates that of most surgeons, is that comparatively few rectal cancers actually obstruct the bowel. These patients, therefore, do not need colostomy, and are done no kindness when it is performed. Colostomy alone adds little to the comfort and nothing to the life expectancy of a patient with hopeless cancer of the rectum. A colostomy without excision of an ulcerated, infected malignant lesion of the bowel is of no value, and its unwise performance in this type of case has brought an essentially useful operation into undeserved disrepute.

Anterior Resection of the Rectum with Preservation of the Sphincter—Anterior resection of the rectum with preservation of the sphincter would be the ideal operation for carcinoma of the rectum if it could be shown, in a large series of patients followed for a sufficiently long time, that the operative mortality is at least as low as, and the percentage of five-year cures is at least as high as, can

be achieved by abdominoperineal resection. The preservation of the anal sphincter is obviously a boon to the patient in whom it can be accomplished without undue risk, and the controversy now raging in the medical literature on that point is somewhat surprising. One distinguished American surgeon has stated that he has no sentiment regarding the sphincter ani. The obvious retort is that while he may have none, the patient to whom the sphincter belongs has a definite and understandably strong feeling about it. Most patients heartily object to the loss of this efficient mechanism, though naturally, if its preservation involves a risk to life, the game is not worth the candle and the conservative-radical operation, so to speak, cannot be justified.

Over the last few years I have occasionally performed this operation, in cautiously and carefully selected cases which met certain criteria: 1. The lesion was at least 6 to 8 cm. above the anal margin. 2. The lesion was not too extensive. 3. Most important of all, the lesion had not involved the lateral tissue planes. The operation is undoubtedly more difficult from the technical standpoint than a one-stage abdominoperineal resection because it requires the performance of an end-to-end anastomosis deep in the pelvis, in a rather non-accessible area.

Primary healing of the anastomosis can, however, be expected. It is still commonly taught that the blood supply to the distal bowel cannot be assured if the superior and the middle hemorrhoidal arteries are ligatured, but I share Dixon's³ opinion that the statement is fallacious. Dixon reported in a personal communication that he has carried out this operation in 92 patients when the lesion was at a level of 6 to 10 cm. from the anal margin. He states that in a number of cases in addition to ligaturing the superior hemorrhoidal vessels that he has taken those branches of the middle hemorrhoidal which come through the lateral ligament of the rectosigmoid and that he is convinced that the inferior hemorrhoidal vessels provide an adequate blood supply for the entire rectum. On numerous occasions I have ligated both these vessels in operations in which the lower end of the rectum was preserved and have invariably observed primary healing of the anastomosis.

I am still using radical anterior resection of the rectum with preservation of the sphincter with a great deal of caution, but I rather doubt that retrograde extension is of common occurrence in rectal malignancy. I feel rather strongly that it is possible to employ the operation in a fair percentage of patients with cancer of the upper end of the rectum, restore continuity of the bowel by suturing the descending colon to the lower end of the rectum, avoid a prohibitively high mortality and give the patient as good a chance of ultimate cure as would be achieved by abdominoperineal resection.

Abdominoperineal Resection—In spite of my convictions as to the desirability of preservation of the anal sphincter, the majority of cases of carcinoma of the rectum are not suitable for this technique, and most of my own patients are subjected to a one-stage abdominoperineal resection. I have passed through the usual cycle of one-stage and two-stage operations. In my earliest cases I invariably did the two-stage operation. Then I became bolder, but the high mortality associated with the one-stage procedure deterred me and I reverted to the two-stage operation.

As my experience increased further, I again adopted the one-stage operation, and I now use it in nine out of every ten cases. The two-stage operation is reserved for patients who are elderly or extremely obese or who for other reasons seem poor risks. In addition to the fact that it takes more time, adhesions make it technically more difficult than the single-stage operation, and I personally regard it as having a narrower and narrower field of usefulness. It does, however, possess the unquestioned advantage that it establishes a functioning colostomy prior to extirpation of the rectum, and while the two stages of the operation are by no means balanced anatomically, physiologically perhaps something is to be said for their performance.

The technique originally described by Sir Ernest Miles I find entirely satisfactory. The incision is made just to the left of the midline and is carried up to, but not above this level of the umbilicus. Extension above this level increases the risk of postoperative hernia. Following exploration of the peritoneal cavity and determination of the operability of the lesion, the patient is placed in the steep Trendelenburg position and an incision is

made through the lateral peritoneum. The sigmoid and the descending colon are reflected mesially and the ureters are identified. Primary ligation of the superior hemorrhoidal artery, or, under certain circumstances, of the inferior mesenteric artery, is next carried out. The hollow of the sacrum is dissected in the usual manner, and the bladder is separated from the rectum. The lateral rectal stalks are identified, clamped, divided and ligated. Then a Copede Martel clamp is applied at the point at which the colostomy is to be created. This is an extremely useful instrument. It saves time and effort otherwise expended in closing the distal end of the bowel, it is quite secure, and I have personally had none but satisfactory experiences with it.

The bowel is divided by cautery and the distal end, with the clamp in situ, is dropped into the hollow of the sacrum. After the peritoneal floor has been carefully reconstructed, powdered sulfanilamide (5 gm.) is sprinkled over the pelvis. The point in the original incision at which the colostomy is to emerge having been determined, a transverse incision is made across the rectus muscle and the fascia at this level, and the proximal limb of bowel, with the clamp in situ, is brought out through it and permitted to extend for a distance of two inches above the skin margin. The peritoneum is closed with a running suture of chromic No. 0 catgut and the remainder of the wound is closed with several retention sutures of silk or wire.

The patient is then placed in the lithotomy position and the anus is closed with an encircling suture of heavy silk, after which an incision is made from the coccyx to the inferior aspect of the anus, widely encircling the anus. The coccyx is not removed. The postsacral space is entered, the limb of bowel is delivered, and a very wide extirpation of the skin and the underlying levators is carried out. After the rectum has been removed, all bleeding points are ligated and the cavity is filled with rubber dam and packed with gauze. This incision is only partially closed.

Anesthesia

At one time or another I supposed I have used every conceivable anesthetic agent for large bowel surgery. I once insisted on performing all intestinal resections under spinal analgesia, at first using novocain and later nupercain. Nupercain supplies almost perfect

analgesia, but certain experiences with it convinced me that it is more dangerous than ether. Then I used, in turn, all the gaseous anesthetics. For the past several years, however, I have operated exclusively under cyclopropane ether anesthesia and am thoroughly convinced that my patients have done better under it than under anesthesia secured by other agents. An obese, short-chested patient is usually given ether anesthesia by the intratracheal route after induction with cyclopropane.

Preoperative and Postoperative Care

Whatever the operation to be carried out, the preoperative preparation of a patient with carcinoma of the rectum is the same. For 3 to 5 days before operation the diet consists of nonresidue items. Over the same period of time a daily purgative is given preferably magnesium sulfate and cleansing enemas are employed once or twice daily. Twenty-four hours before operation paregoric in liberal quantities is substituted for the daily purgative. Seventy-two hours before operation sulfasuxidine or some similar chemotherapeutic agent is begun by mouth. Otherwise preparation is as for any major intra-abdominal procedure.

If the patient's condition is not completely normal, the routine described is supplemented by special measures. Anemia is corrected by transfusions of whole blood. Hypoproteinemia is best corrected by a diet high in protein, which can be supplemented, if need be, by infusions of protein hydrolysates (amigen) and transfusions of plasma.

It is sound practice to administer blood by transfusion during the operative procedure. Duodenal intubation is begun promptly, and the fluid balance is maintained by infusions of glucose and physiologic salt solution in the proper proportions. Additional blood is given as indicated. Chemotherapy is continued until all danger of infection is past, usually for five days. The clamp is removed from the proximal bowel at the end of 72 hours. Duodenal intubation is discontinued and fluids are permitted by mouth as soon as gas is passed, which is usually almost as soon as the colostomy is permitted to function. The packing in the posterior wound is removed gradually from the third to the fifth day. Hot sitz baths are begun on the eighth to the tenth day, and the patient is encouraged to be up and about at once.

End Results

Although my personal experience with carcinoma of the rectum is somewhat limited, the statistics are worth presenting as illustrating what can be expected to occur in this disease in an average hundred-bed hospital in a small community which draws its clientele from a wide area of the surrounding countryside. During 1945 27 of the specimens studied in the laboratory of pathology of the Vicksburg Clinic and Hospital showed carcinoma of the large bowel, which in 15 instances was located in the rectum. Over the past five years the number of cases has been much the same each year.

During the past five years of the patients observed with carcinoma of the rectum 90 per cent have been subjected to one-stage or two-stage abdominoperineal resection, permanent colostomy with posterior resection or anterior resection. The operative mortality has been 6 per cent. Twenty per cent of the patients who survived operation subsequently died of recurrence of the disease, and another 6 per cent are known to have recurrences at the end of 3 to 5 years after operation. Sixty-eight per cent, however, are known to be living and, as far as can be determined, to be free from recurrence. What these statistics amount to is that of every 100 persons treated at this hospital for carcinoma of the rectum, 90 have been found suitable for resection, 84 or 85 have survived operation, and 50 to 60 have been free from residual or recurrent disease at the end of 3 to 5 years.

These figures are much the same as those reported by other observers for comparably treated cases, which means that of all major cancers, cancer of the large bowel offers as good a prognosis as any malignant neoplasm and a better prognosis than most. The results in this disease are incomparably better than the results of surgery for carcinoma of the stomach or the lung, and they compare very favorably with the results of carcinoma of the breast. The factor which militates against further improvement in results, however, is

clearly evident in such a report as that just made by Ottenheimer for an eleven-year period in Connecticut. In 1935 the average delay between the onset of symptoms and the institution of treatment was 11.2 months. Two years later it had fallen to 6.9 months. But over the last eight years of the study there was no further decrease in the interval, which remained fixed at between six and seven months. It seems scarcely necessary to point out that the operability rate in carcinoma of the rectum would be higher, and the surgical mortality would be lower, and the proportion of permanent cures would be far greater if only patients would present themselves to physicians as soon as symptoms develop and if only physicians would make appropriate studies and institute competent treatment without delay, or would refer their patients to surgeons who could institute it.

Summary

Carcinoma of the rectum is a disease in which the outlook for cure is favorable because symptoms are clearcut and readily referable to the site of the neoplasm. A complete survey of the patient, including digital examination of the rectum, endoscopic studies, and barium enema, is essential for diagnosis and differential diagnosis. Surgery is feasible in 90 out of every 100 cases and should always be radical; this is not a disease in which colostomy is likely to be useful. The prognosis would be greatly improved if only patients reported promptly to their physicians on the development of symptoms, and if only physicians carried out adequate studies and provided adequate surgical treatment as soon as the diagnosis was established.

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The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

THE MISSISSIPPI PLAN

Our per capita fund for the indigent sick was a vital step forward for unfortunate classes, and a just plan. It has not only done much for them, but it has enabled many small hospitals to live and serve the middle class at a reasonable cost, which they could not have maintained while carrying the charity load through the days of the depression. This per capita plan is a strong friend to democratic medicine; it does not interfere with the doctor-patient relations. Many people, and useful ones live today because of this fund. It has served a people poor in worldly goods at the time, but rich oftentimes in inherent ability and leadership. It has given the recipients of its provisions a sense of justice and fairness on the part of our state that has activated patriotism. It is very unfortunate that some have been blinded by the dollar mark until

they do not see the importance of this fund in the social and economical life of our people of the rural sections. But in the main both hospitals and doctors have cooperated in a fine way in its utilization for a great humanitarian purpose. Some doctors have misunderstood the mission of this fund. They refer cases to other doctors telling them that the state pays their hospital and doctor bills. There is no provision for the doctor's bills in the measure and no doctor is supposed to charge a patient who receives this fund. It does not provide for nursing fees either. It is simply for the urgently sick who are most unfortunate in finances. It provides four dollars per day for room, and some other fees.

With our present inflation we believe this amount should be raised by our legislature. Let us appreciate this aid to the unfortunate sick and help to use it to the best advantage. The doctors as a rule have been very liberal in so doing.

OUR FOUR-YEAR MEDICAL SCHOOL

The question is and has been for many many years in Mississippi: When a four-year medical school? We have had a good two-year school for about forty-five years, but have been unable to cross the line and go on to a full unit. It is hard to conceive just why. There certainly is not that much difference in the cost; even if there were, it is time we quit renting and working on the halves medically speaking and have our own school. Our schools are about twenty per cent short of room in this country. We must enlarge them or put in more schools. We think it better for us to add another good four-year school. Some say we have more medical schools and doctors than other countries now. So we do; so we do also have more automobiles than any other nation. The people of this country are using more medical service and using it to a good advantage. The United States is the big brother of the world now in many respects and certainly in medical education. Many doctors from other countries are and will be coming to the United States for postgraduate work. We need to receive them in our larger medical schools.

We think Mississippi should educate enough young men to supply our own state with doctors and to have some to go out to other sections to practice democratic medicine; we provide plenty of manpower to do almost everything else. If our state can have one of the

very best two-year medical schools for nearly a half century, the best health department in the United States, the best system of junior colleges, can lead in pulpwood and pecan and tung oil production, can rank third in lumber, build the best system of arterial roads in the nation, and offer the best location in the nation for a medical school in the fastest growing city in the Deep South, while promising an income of eight million dollars per year from oil, it can have a four-year medical school to turn out practical medical men who can serve us better than any from Long Island or California. We need medical vision and the courage to go ahead. And while all the pressure groups are lining up to call on the legislature, it is time for the friends of the four-year medical school to get busy and keep busy. We have no further patience with any man who is against a four-year medical school for our state and it is time for action. It is time for doubters to be for a medical school.

DR. MATAS TO BE HONORED

We share the South's pride in extending a most cordial welcome to the International Society of Surgeons. It is quite fitting that it meet at New Orleans, the cosmopolitan city rich in history and romance and eminence as a medical center. It is especially fitting to come to the home of and to honor the great and beloved Rudolph Matas, who honored the organization as its president and whose contributions in medical research, skillful technic, writings, and versatility in human affairs leaves a priceless heritage for all time.

OUR CANCER PROGRAM

The cancer campaign in Mississippi fostered by the Mississippi State Medical Association with Mrs. Wates in active charge, has done a fine work and it is moving forward this year in a bigger and broader manner. The educational part of the program is perhaps the most important, but it is serving well in other ways. Cancer ranks second among the diseases that are taking human life in this country. Its exact cause is not known, but even so if discovered and treated in time fifty per cent of the cases can be cured by the already known and approved methods of surgery, radium and x-ray. Much investigation on cancer is under way, but until we do the best we know it is a travesty on the mission of the medical profession. To utilize the means we

now have to best advantage is not only the responsibility of the medical profession but of every citizen of the United States. This valuable program has not been understood by all. We have cancer clinics where many patients have been treated. But some seem to think that doctors are paid for operating and their services. They do this as a matter of love for suffering humanity. Some think that any patient can go to any one of these clinics and receive treatment without any pay. This is not true. These clinics take all, but only those who are not able to pay their way are exempt.

Dr. Percy Wall of Jackson, a delegate to the American Medical Association and a man active in medical organization in Mississippi, has returned after several weeks abroad. We have asked him to give us a brief account of his trip and his observations in medicine and otherwise.

The people of Tutwiler did honor to themselves in doing honor to Dr. J. G. Backstrom on August 8, when he received his fifty-year certificate and his fifty-year pin. The people of his town must hold him in very high esteem, which he richly deserves. After having a picnic for him they presented him a fine chair. But the spirit of love and appreciation was their finest gift. The doctors of the surrounding towns showed fraternal spirit also with their presence. It was good to be there.

News and Comment

INTERNATIONAL SOCIETY OF SURGERY

An international congress of surgery such as has met only once before in the United States, and never in the South, will convene in New Orleans October 12-15 with more than 500 of the world's most prominent surgeons in attendance.

This was announced today by Dr. Isadore Cohn of New Orleans, member of the International Society of Surgery which has chosen this port city for its thirteenth international congress, and chairman of the surgeon's committee in charge of arrangements.

Honorary chairman is Dr. Rudolph Matas, internationally known surgeon, in whose honor New Orleans was chosen for this year's meeting. Dr. Matas is the only living American past president of the society. The other American president was the late Dr. W. W. Keen

of Philadelphia, who was elected in 1914 when the Congress met in New York.

More than 300 leading surgeons are already registered from 37 countries.

President of the Society is Dr. G. Grey-Turner of England, who was elected at the twelfth international congress in London in 1947. This meeting, under the patronage of King George VI, was the first congress of the International Society held since 1938, when Dr. Matas presided.

HEART ASSOCIATION

The North Carolina Heart Association will hold its annual session at Winston-Salem, Sept. 8-9, with eminent men from the East and South participating.

ANNOUNCEMENTS

Rush E. Etterville, M.D., announces the opening for the practice of general and thoracic surgery at 746 Manship Street, Jackson, Mississippi.

William R. Armstrong, M.D., announces the opening of his office at 206½ South Spring Street, Tupelo, Mississippi, for the practice of diseases of the eye and refractions.

Charles L. Neill, M.D., announces the removal of his offices for the practice of neurological surgery to 746 Manship Street, Jackson, Mississippi.

The Grenada Hospital, Grenada, Mississippi, announces the appointment of Dr. Gaines L. Cooke to its staff in the department of internal medicine.

The Seale Harris Clinic announces the addition of departments of Cardiology and General Surgery, Seale Harris, M.D., director; James F. Crenshaw, M.D., co-director, gastroenterology; W. Marvin Woodall, Jr., M.D. diabetes, endocrinology; Claude C. Blackwell, M.D., general surgery; James C. Crabtree, Jr., M.D., internal medicine; Addison L. Messer, M.D., cardiology, 2219 Highland Avenue, Birmingham, Ala.

Drs. James C. Green and J. H. Green of Tupelo announce the opening of a modern clinic for the diagnosis and treatment of medical and surgical diseases. This is primarily a diagnostic and out-patient treatment clinic.

Dr. J. H. Green has recently received his second diploma from the University of Louisville Medical School, Louisville, Ky., expressing the University's appreciation of his professional service to mankind of fifty years of faithful medical service. He is head of the department of internal medicine at the clinic.

Dr. James C. Green specializes in surgery and obstetrics. He holds membership in the American College of Surgeons, and the Southeastern Surgical Congress. He is head of the department of surgery and obstetrics at the clinic.

The facilities of the clinic are open to the medical profession and doctors are welcome at all times. A large medical library will be opened soon, to serve as a lounge and will be available for reference work for visiting physicians as well as the clinic staff.

DEATHS

DR. SIDNEY C. WILLIAMS

Services for Dr. Sidney Colton Williams, of Goodman, who died August 2, were held at the Arlington National Chapel, Arlington, Va., with burial in Arlington National Cemetery. He was 64.

Dr. Williams, who was an eye, ear, nose and throat specialist, retired two years ago.

He was a member of the Methodist church and the American Legion.

Dr. Williams was cited for bravery while serving as lieutenant colonel with the Medical Corps during World War I.

He is the brother of W. A. Williams of Delta State Teachers College. He also leaves his wife and a sister, Mrs. Joe Shrock of Goodman.

DR. O. N. HOOKER

Funeral services for Dr. Orval N. Hooker were held at the First Christian church of Amarillo, Texas, on July 25.

Dr. Hooker, who was known to his many friends as "Junior," was born in Chicago, Ill., on January 23, 1916. At the age of four he moved to Rolling Fork, where he attended school and later was graduated from the Rolling Fork high school. He took his pre-medical schooling at the University of Mississippi, earning his Doctor of Medicine degree from Tulane University. He was a member of Delta Kappa Epsilon fraternity and Phi Chi Medical fraternity.

He interned at Duval County Hospital, Jacksonville, Florida, and was resident physician at Greenville County Hospital, Greenville, South Carolina. He later served as surgeon on the staff of the Charity Hospital in Jackson, Miss., until he entered the Medical Corps of the Army Air Force. After the war he trained at Aultman Hospital, in Canton, Ohio, in obstetrics and gynecology, later going into private practice in this field of medicine in Amarillo, Texas, where he made his home until his death.

He is survived by his wife, Frances Asbury Hooker, of Amarillo, Texas, his mother, Mrs. George Cortright, of Rolling Fork, two sisters, Mrs. V. B. Schimmel, of Rolling Fork, and Mrs. W. A. Chase of Jamestown, N. Dakota, and a brother, Cauley Cortright of Rolling Fork.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson

Otolaryngology—Charles R. Hume

Ophthalmology—Edley Jones, Vicksburg

Obstetrics and Gynecology—J. F. Lucas, Greenwood.

Orthopedics—Thomas H. Blake, Jackson.

Public Health—Felix J. Underwood, Jackson.

Pediatrics—Harvey F. Garrison, Jackson.

Radiology and Roentgenology—Karl O. Stin-
gily, Meridian.

Pathology—R. M. Moore, Vicksburg. Miss

Surgery—W. H. Parsons, Vicksburg.

Urology—Temple Ainsworth, Jackson.

PEDIATRICS

BACTERIAL FLORA IN EYES OF NEWBORN INFANTS DURING FIRST FORTY HOURS OF LIFE AFTER SINGLE INSTILLATION OF PENICILLIN AND SILVER NITRATE—H. Charles Franklin, Memphis, Tenn., *Journal of Pediatrics* 32:251-56, March, 1948.

"With 100 new born infants, one drop of penicillin solution (2,500 units per cubic centimeter of saline) was instilled into the conjunctival sac of each eye. With another 100 infants, one drop of silver nitrate solution (1 per cent in distilled water) was instilled into each eye. Mechanical cleansing was performed before each instillation in both methods. In each study the eyes of 10 infants were cultured during the interval of zero to four hours after the prophylactic treatment was given. Groups of 10 infants were then cultured at four hour intervals for the first forty

hours. Cultures were taken from the conjunctival sac of each eye of each infant studied. Aerobic, anaerobic, and carbon dioxide cultures were run on each specimen.

Positive cultures were obtained in 41 per cent of the infants studied after the use of penicillin and in 45 per cent of the infants studied after the use of silver nitrate. There was a tendency for the number of positive cultures to increase with time after each method. The *Staphylococcus* and *Streptococcus* were the predominant organisms found in both groups. In the combined series, 7.5 per cent of all the organisms were anaerobic. No gonococci were found.

This study indicates by bacteriologic findings that penicillin compares favorably with silver nitrate as a prophylactic agent, and that penicillin in this series was slightly better than silver nitrate in depressing the bacterial flora of the new born conjunctiva during the first 40 hours of life."

Comment: It has been the practice of the pediatric department of the Baptist Hospital for some time to use a solution of penicillin rather than a solution of one per cent silver nitrate. Apparently the pediatricians are inclined to favor the use of penicillin over the use of silver nitrate. The common objection to silver nitrate, they feel, is remedied to some extent by the use of penicillin rather than silver nitrate. Of course, it should be understood that a solution of penicillin or a solution of silver nitrate is neither one stable since both of them deteriorate materially on age.

State Board of Health

Felix J. Underwood, M.D.

THE GHOST OF MALARIA*

A. L. Gray, M.D., Director
Preventable Diseases Control

A ghost is a product of the mind. It is a mental picture resulting from past experience. It is something that isn't there, but to the mind in which it exists it is very real.

Malaria is a disease of the human race caused by the malaria parasite which is transmitted or carried from person to person by a certain type of mosquito. This infection in the human causes many symptoms including chills and chilly sensations, fever, aches and pains, weakness, anemia, profuse sweating, and even death. It is a reality and an expensive reality when one actually has it, for it incapacitates its victims for short or long periods of time and requires expensive diagnosis and treatment in addition to the cost of loss from work.

"What is the connection between a ghost and malaria?" you may say. Our thinking today in regard to malaria is a result of our experience 10, 20, and 30 years ago. In those years Mississippians did have a large amount of the disease. In 1927 for instance, physicians reported 68,000 cases and 427 malaria deaths in Mississippi. At that time people expected and prepared for malaria just as they prepared for the spring planting and fall harvest. In those years family life revolved around the bottle of tonic and box of pills and capsules used to treat and prevent malaria. This was the experience for many, many long unproductive years in Mississippi and the South in general. Our experience with malaria during this period made an impression on the public mind and caused the people to form habits of thinking in regard to malaria that have carried over to the present time as a ghost in the night. Now we find ourselves still thinking that we have a lot of malaria—still buying anti-malarial pills and tonics. We continue to pay a terrific price for defense against this

ghost of malaria. The problem in Mississippi at present is a problem primarily in the minds of the people for if malaria is here it cannot be proved with any facts at hand.

Here is what is meant. In 1948 there were 12 deaths reported in Mississippi as being due to malaria. Investigation of these 12 deaths revealed that in few, if any, instances were the doctors reporting such deaths reasonably sure of their diagnosis and more were proved by laboratory methods of finding the malaria parasite in the blood. This is the only sure method of diagnosis. In the same year, only 125 cases of malaria were reported by physicians in the state and few of these were diagnoses confirmed by laboratory methods. Compare the 125 cases and 12 deaths reported in 1948 as being due to malaria with the 88,000 cases and 427 deaths in 1927.

The public mind still says, "But doctor, I have chills or chilly sensations, with fever. I am tired and all worn out. My bones and joints hurt. I am anemic. My head aches. I just don't feel good. I know this is malaria." Many with these symptoms go to a drug store and are encouraged by some druggist to believe that all their troubles are malaria, the result being the sale of a bottle of tonic or a box of pills. The patients take the tonic or pills, get well in a few days and are sure that they did have malaria because they got well while taking the medicine advertised for malaria. Others go to the doctors who diagnose either malaria or a variety of other things, and after a short time these patients are well also. Many others do nothing. Most of them get well too.

There are many infections and disease conditions of the body that produce these same symptoms. These infections are much more common than malaria. Infection in the kidney, bladder, intestines, lungs, nose and throat, gallbladder, or anywhere else in the body can and does cause one or all of these same symptoms. At the present time very, very few people with these symptoms actually have malaria. Medicine manufacturers are still sell-

*Delivered over Radio Station WJDX, July 23, 1949.

ing their malaria remedies on the basis of the unfounded belief of the public that the disease remains a big problem in Mississippi, as it was years ago. Unfortunately, hundreds of thousands of dollars are spent each year for such preparations by those who believe they have malaria and who would get well much quicker if a diagnosis were properly made and some other drug used.

Life insurance premiums in a given area are influenced by the history of communicable disease. This means that malaria has been a factor in determining the cost of insurance. Here again the ghost of malaria is expensive. In the past few years industries have tended to move into Mississippi, but many have seen the red stop light of malaria as it was or the ghost of malaria as it is purported to be and have gone elsewhere. Commentators and writers of the East and North take particular pleasure in pointing out the ghost of malaria in the South, but they point to it as a reality rather than a ghost. Is it possible that these influential people want to keep this "has been" around our neck in order to keep their industries from migrating to our midst? The State Board of Health frequently receives inquiries from prospective tourists who "have heard" that it is dangerous even to visit in Mississippi because of malaria.

The plain facts are that for the past 10 years malaria has declined very rapidly in Mississippi. For the past 3 to 4 years there has been an insignificant amount of proved malaria and practically all of this has been among veterans infected in the South Pacific and other malarious areas outside the United States. At present malaria in our state is a problem only in the minds of the people and a few physicians.

It is time for Mississippi—all Mississippians—to throw off the stigma of malaria for it is certainly an economic burden which we cannot afford. Here is how this should be done:

1. Every Mississippian should realize that his illness is not likely to be malaria and that no treatment for it should be taken unless a doctor has first found malaria parasites in the blood.
2. Some druggists are contributing to this stigma or reputation in regard to malaria by continuing to encourage the public to buy patented malaria remedies.

3. Since malaria can be definitely diagnosed by seeing the parasite in the blood, physicians should prescribe malaria treatment only in cases of proved malaria.
4. It is now time to talk about our freedom from malaria rather than the ghost of malaria. The illness you have has little chance of being malaria.
5. Since there is an occasional case of malaria in the state it is very important to know who has it and where it is occurring so that such cases will not start new outbreaks. Control methods applied around the case can eradicate it. Reporting of all proved cases by physicians is absolutely necessary.

In most of the state at present a mosquito control program is being conducted. Let us not feel that this can be discontinued so long as a few cases are scattered over the state. These serve as foci of infection from which mosquitoes may transmit the malaria parasite to other people and thereby start another epidemic of it. This work must go on until no cases can be found and final eradication is realized.

Please rest assured that there is actually very little malaria in Mississippi today. Symptoms once thought to be due entirely to the disease are the result of many types of illness having no relationship to malaria. Fever is present in practically all infections and with it go aches, sweats, and chilly sensations. These will disappear just as well or better without malaria pills and tonics without malaria pills and tonics and will disappear even more quickly when properly diagnosed and treated by your physician with modern drugs other than quinine, atabrine, etc.

Since our malaria problem today is primarily a ghost and not a reality it is high time to rid our minds of this tremendously expensive ghost. Although malaria once was a serious problem in Mississippi, **no longer is this true. Medical schools have difficulty in getting cases of malaria for teaching purposes.**

There is no longer any reason for people in Mississippi to spend large sums for anti-malaria drugs. Neither is there any excuse for Mississippians continuing to think of malaria when they are ill, for malaria is now only a ghost.



On the basis of formal and informal clinical reports the following dosages of Dramamine are indicated: →

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G. D. Searle & Co., Chicago 80, Illinois

SEASICKNESS

One 100 mg. tablet one hour before boarding the ship. Thereafter, one tablet before or with each meal and before retiring, as indicated.

AIRSICKNESS OR TRAIN SICKNESS

One-half tablet or one full tablet 30 minutes before starting the trip. Thereafter, similar dosage before or with each meal and before retiring, as indicated.

MOTOR CAR, STREET CAR OR BUS SICKNESS

One-half tablet or one full tablet 30 minutes before beginning the trip. Thereafter, similar dosage approximately every four hours, if necessary.

Hidden Genito-Urinary Tract Conditions Masquerading or Misinterpreted as Abdominal Conditions*

THEO. H. HANSER, M.D.

St. Louis, Mo.

Introduction:

A CRITICAL analysis of every sign and symptom presented by a patient is paramount to good medicine and surgery. This statement is so trite that it borders on the ridiculous to repeat it, yet, this truth is axiomatic and is fundamental not only to the present, but also the future progress in medicine. The medical truths that have come down to us through the centuries and stand out crystal clear today in this great era of specialization are based on this fact. This attitude of a critical analysis of the patient's symptoms and signs finally overcame the dogmatic reasonings of Galen for it marked the true scientific approach of analyzing a disease complex. The alert inquiring mind of the physician into the patient's problem is the true scientific approach in clinical medicine. This is very important for the present day, the great age of specialization. There is real danger in having a patient with symptoms and signs submitted to a gamut of mechanical investigations without truly and critically analyzing the patient's personal complaints. We must constantly bear in mind that the art and wit of medicine must be combined constantly with science and practice of medicine. The surgeon especially must be ever alert to analyze critically the presenting symptoms and signs of the patient. He must have the broad concept of the general practitioner, whether he is the consultant or the sole responsible person in charge of the patient. He must have the meticulousness of the internist in interpreting some of the more abstract findings in the patient.

The happy combination of all factors gives one the true approach in clinical investigation of a patient or a group of patients' problems. This attitude was reflected in such men as Harvey, Hunter, Jenner, Sir James Mackenzie, Sir William Osler, and many others. They were really thorough physicians. They were really sound scientific clinical investigators and

should stimulate us to follow their example.

In our modern era of specialization, we are apt to run the gamut of laboratory examinations before critically analyzing some of the striking symptoms and signs presented by the patient. It has led to errors detrimental to both patient and physician and the progress in medicine. The broad concept of a patient by an alert well-trained general practitioner will go much farther than the scrutinizing specialist examining a portion of the anatomy of the patient in which he is particularly interested as a specialist. There is real danger in that the internist is too much interested in symptoms and signs above the diaphragm and the surgeon too much interested in the symptoms and signs below the diaphragm; the otolaryngologist in the upper air passages and paranasal sinuses, the urologist in vesicle neck obstruction, etc. In dissecting the body thus, pitfalls are created and errors in diagnosis result.

Subject:

In presenting the subject above, I do not wish to presume to be a pedagogue and didactically present something that we did not know before and reveal some striking new truth, nor do I wish to presume to be the scientist who presents a new scientific fact as is done so ably by our university colleagues devoting full time to the science of medicine. We, you and I, who are out in the practice of medicine and surgery, especially surgery, are applying our knowledge in taking care of the patient entrusted to our care. Ever so often we must take stock of ourselves to be certain that we are giving the patient at hand the type of medicine, the type of surgery, he is entitled to. We are so apt to go on routinely applying certain knowledge egotistically assuming that all is well only to behold in the end that we had been in error and should have done otherwise. The routine abdominal conditions so often encountered in patients are at the present day so much stereotyped that they can easily be diagnosed. An acute or chronic gall bladder with stones, both clinically and radiologically may be so striking that the

*Read before the Section on Surgery at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949.

treatment to be followed with surgical removal of the diseased part technically well done will completely rehabilitate the patient. The same may be said for the acute appendix, perforated ulcer, and some of the more common obvious gynecological conditions. When symptoms and signs are plain and textbook like classical, the diagnosis of abdominal conditions is very obvious. The art of medicine, however, must come into play when the problem is difficult and the astuteness of the attending physician with his sound judgment must be called upon. Pitfalls are numerous and it is the man who constantly checks himself who will be less in error. The patient himself is only interested in the diagnosis and treatment as far as it concerns him or herself in completely rehabilitating him. If a fine self-satisfying diagnosis has been made and an excellent technical operation has been performed and yet the patient has not been rehabilitated in due time, warrants checking on oneself as to where the error was. A patient presenting himself with a single solitary stone in the gall bladder probably silent, may cause less or no symptoms in comparison to an overlooked associated hydronephrosis in the right or left kidney pelvis. If such a patient is not relieved after cholecystectomy, one is apt to find that the hidden hydronephrosis was the real underlying pathology of the patient's symptoms.

Even to a surgeon, a good operator, patients do come with symptoms and signs seeking help through good diagnosis and treatment. The symptoms and signs may be so classically clear cut that it may virtually spell out the diagnosis and be concluded by a fine piece of surgical work on the operating table completely rehabilitating the patient. On the other hand, in this great era of neuroses and psychosomatic medicine psychologically so carefully analyzed, patients do sometimes come with bizarre symptoms to the surgeon and it is then easy to relegate these people to a group that are pushed around and probably driven to the cults because the first attending surgeon who was sought to diagnose the condition failed to detect some hidden physical process underlying the patient's symptoms with or without psychosomatic reaction. I personally wish to dwell on the large group of patients who may come to the surgeon in which a hidden genito-urinary tract condition may be interpreted as an abdominal condition. If Dr. Howard Kelly at Johns Hopkins and

later Dr. Guy L. Hunner of the same school, had not conscientiously brought this group to the attention of American medicine, many conditions today would still be overlooked in patients. Ever if Dr. Hunner did go all out on ureteral stricture, preaching about it from coast to coast, winning more opponents than proponents to the condition, it has definitely made men more careful in evaluating some of the hidden genito-urinary tract conditions in patients who have all sorts of other treatment instead of the one they should have had. To a large group of observers, the work of these men in Baltimore has definitely established that a certain group of symptoms are indicative of disturbed renal function or drainage. The symptomatology of tiredness, dragginess, pepleteness, irritability of the nervous system, backache, and occipital headaches, is definitely indicative of a toxic condition due to inefficient elimination through the genito-urinary tract, not to the degree of an elevated nonprotein nitrogen, or a decreased renal function test by phenolsulphonaphthalein, but probably only by careful urinalysis with a low specific gravity and probably most likely negative microscopic findings. In addition to the above symptoms there may be general abdominal discomfort with or without localized pain to either right or left side and considerable gastric symptoms that may lead one on a false track of suspecting cholecystic disease or other disease entities. The symptoms and signs may be confusing, the cholecystogram negative, gastro-intestinal tract fluoroscopic negative except probably an irritable colon; urine negative; findings so negative that the patient is relegated to the group of psychoneuroses. With that he begins his rounds to the various regular and irregular practitioners seeking relief. In the background lies the kidney disturbance that is not even thought of, unless the surgeon is alert that the condition may be present. No harm may probably be done if the patient is dismissed with a sedative and a reassuring talk. However, if the pain in the side is misinterpreted and led to surgery for a chronic appendix or a cystic ovary, unnecessary surgery and harm may be done. To take out an appendix may not be so bad, but to sacrifice on suspicion a vital structure as an ovary, this may certainly aggravate the morbid state of the patient. One can generally differentiate between ureteral and appendiceal tenderness bearing in mind that "Morris's point is found by first locating

the sacral promontory and then moving laterally with the fingers, while McBurney's point is found by first locating the anterior superior spine of the iliac bone and then moving toward the navel. As a rule one can determine fairly accurately whether the tenderness found in the right lower quadrant arises from the appendix or the ureter where it crosses the pelvic brim." In this connection it is interesting to note that appendiceal pains usually are colicky and cramping in nature while the pain along the ureter is sticking in character. On pelvic examination in females, the ureter must be looked upon as an integral part of the broad ligament. It is difficult to understand why the gynecologist who usually does not do urology does not take this into consideration. Tenderness in the broad ligament may be entirely along the ureter and away from the ovary and the tenderness misinterpreted as being ovarian in origin. I am not a urologist in that I do not limit my work to urology, but do general surgery. However, I was intimately associated with the specialty through my good fortune in being associated with an uncle, Dr. H. A. Hanser, now deceased, who was primarily interested in gynecology and female urology and its relation to gynecology. The relation of the two fields is very important and obviously so. So much so that it seems rather trite to call attention to it, yet I feel important phases of this relationship had been lost sight of by the urologist who does not do gynecology, and the gynecologist who does not do urology. When one goes to meetings of the gynecologists one hears about vaginal, cervical, uterine and ovarian pathology, etc. When one goes to meetings of the urologists one hears about vesicle neck pathology, kidney pathology, etc., but nothing of conditions that may be related directly to both specialties. When one is confronted with the problem of evaluating symptoms and signs referable to the female pelvis from the gynecological viewpoint one must constantly keep in mind the urological angle, and when one is confronted with the problem of evaluating a urological disturbance in the female, one must constantly keep in mind the gynecological angle. In evaluating the cause of vesicle tenesmus in the female, pelvic tumors and pelvic inflammation are as important to consider as pyelitis. In evaluating the cause of pain in the adnexae regions and broad ligaments it is just as important to consider the pelvic ureter as the seat of pain and not the tube and ovary alone.

Yet it is surprising how often this important relationship is lost sight of.

It is a very striking fact that often pain in the broad ligament region is attributed to a cystic ovary, a very abused term, and surgery carried out usually with little or no relief of the pain due to the fact that the seat of pain is along the pelvic ureter and not in the ovary. If one will learn to keep in mind that in the broad ligament the pelvic ureter in the female is just as important to consider as the tubes and ovaries, misinterpretations as to the cause of pelvic pain will be made less frequently. Through my uncle here in St. Louis, I was introduced to this interesting relationship through the small Bransford Lewis scope which we use on patients in the usual cystoscopy position, and the Kelly cystoscope with the patients in the knee-chest position. With a ureteral catheter in place the relative position of the pelvic ureter can easily be appreciated. It is an ideal method in which to demonstrate to the young men who are coming along in medicine, the relative position of the pelvic ureter when doing a routine bimanual pelvic examination. In training oneself then one can readily appreciate tenderness along the pelvic ureter and learn to outline its course up to the region where it enters the bladder next to the cervix. It is obvious that when a patient presents himself or herself with frank pus or blood, or both, in the urine, that serious genito-urinary tract pathology is present and patient referred to the urologist for more accurate diagnosis, for cystoscopy, and pyelogram. On the other hand, the patient presenting himself with bizarre symptoms who diagnostically then goes through the gamut of examinations with all being negative—the kidney in these patients is not even thought of. To the exclusion of everything else, the kidney should then be investigated even on suspicion, and it is surprising what revealing facts may come to the surface. First a word about urinalysis; in the female the urine should be collected by catheter, a culture taken if possible, the greater portion of the specimen then centrifuged at high speed, and the sediment submitted to careful microscopic examination. In men the urine should be submitted to a second or a third glass specimen examination and then carried through the procedure of high centrifuge and microscopic examination. In approximately fifty per cent of people who have hidden genitourinary tract conditions after everything

is ruled out, these people will show one to two plus leukocytes or erythrocytes per high power field of the microscope. In others, the urine may be negative, but it may be a low specific gravity indicating that the kidney may not be concentrating as efficiently when one submits them through a concentration diuresis test. As to symptoms, these in a more bizarre form have already been mentioned. As to physical findings, there may or may not be tenderness over the kidney. There usually is tenderness of the ureter, either right or left at the pelvic brim. There may be tenderness in the broad ligament on bimanual examination.

Clinical data collected from private office practice to illustrate some of the points mentioned:

CASE I: E. F. A young woman of 19 years of age presented herself with sticking pain, moderately severe, right lower quadrant with dysmenorrhea and backache, occipital headaches, considerable epigastric discomfort and bloating. Appendix removed elsewhere, temporary relief following appendectomy—recurrent symptoms as of old, then diagnosis made of cystic ovary elsewhere. Examination: Abdominal tenderness of the ureter at the pelvic brim, tenderness of the ureter in the broad ligament on rectal vaginal examination—slight tenderness over the kidney, costo-vertebral angle. Urine on centrifuged specimen one plus pus, microscopic examination, equal to two to four cells per high power field. Kelly cystoscopy reproducing her pain on the right side on ureteral catheterization, inefficient draining accessory pelvis, upper pole of the right kidney. This patient had resection of the upper pole of the kidney with the extra pelvis with complete relief.

Follow-up: Patient married since. Has had two children. Has been in excellent health.

CASE II: LL. White female, age 34, recurrent generalized abdominal pain, considerable gastro-intestinal disturbance, attacks of mucous colitis, pain more referred to the right side. Had two different surgical procedures, first appendectomy; two years later shortening of round ligaments for retroverted uterus with symptoms remaining.

Examination: Urinalysis, catheterized specimen, occasional pus cell, occasional examination. Tenderness of the ureter at the pelvic brim. Some tenderness over the right kidney, some tenderness in the right upper quadrant. Gastro-intestinal negative except for hypermotility. Cholecystogram reported as gall bladder slow in emptying, no evi-

dence of calculi. Cystoscopy and pyelogram done, showed double ureter with inefficient draining pelvis in the upper pole of right kidney. Resection of the upper pole with part of the ureter. Relief.

Follow-up: Five years later, markedly improved. Occasional frequency and urgency following upper respiratory infections. Relieved with urinary antiseptics. Gastro-intestinal symptoms almost nil. Went through one pregnancy after this.

CASE III: L. A. White female, aged 44, married, three children living and well. For approximately 15 years considerable abdominal discomfort, pain in the right and left sides—considerable dysmenorrhea, abdominal bloating. Marked backache, occipital headaches. Has had three different surgical procedures; right tube and ovary on one occasion; later hysterectomy; third operation for abdominal adhesions—primarily done for relief of pain. Symptoms gradually becoming aggravated. Then reported for examination with the following findings: Marked generalized abdominal tenderness especially of the ureter at the pelvic brim and also in the broad ligament on bimanual examination. Some tenderness in the right upper quadrant. Pyelogram showed supernumerary pelvis, upper pole of the kidney. Later on resected without much relief. Later on nephrectomy with marked improvements in the general condition. From a state of almost being incapacitated to do her housework, is now carrying on all her duties. Follow-up eight years later.

CASE IV: I. C. White female, aged 46, general health excellent except attacks of pain in the left side, more discomfort at her menstrual period. Was diagnosed ovarian disturbance, probably left cystic ovary elsewhere, surgery advised. Examination at our office: Pelvic examination essentially negative except for tenderness along the ureter on the left side, or tenderness along the ovary. Had cystoscopy with pyelogram, showed double ureter on the left, but apparently draining efficiently. Urine essentially negative on microscopic examination. Did not have surgery and has had no surgery since. Follow-up nine years later: Still in good health, went through the menopause uneventfully—no residual symptoms. Occasionally some dysuria following upper respiratory infection, controlled with urinary antiseptics. This patient was fortunate in that she escaped all surgery.

CASE V: V. D. White female, aged 29, considerable dysmenorrhea, backache, occipital headaches, occasionally some frequency, was diagnosed ovarian cyst and had left tube

and ovary removed elsewhere. No relief of symptoms. Symptoms persisted—investigation revealed a supernumerary ureter on the left with a rudimentary pelvis in the upper pole of the left kidney. Catheterization reproduced her pain on the left side. No further surgery done. Kept under control with urinary antiseptics and occasional cystoscopy with pelvic lavage of the left kidney pelvis.

CASE VI: J. H. White female, aged six, recurrent attacks of abdominal pain, interpreted as chronic appendix. Appendix removed. Recurrent attacks of abdominal pain persisted. Essentially negative urines—only on one occasion, four to six pus cells per high power field at the microscope. Intravenous pyelogram revealed double ureter, right side. No surgery. Kept under control with urinary antiseptics. Ten years in excellent health except for occasional mild dysuria following upper respiratory infections.

CASE VII: E. R. White male, aged 20, entered hospital with history of violent abdominal pain intermittent in character, considerable abdominal distention, vomiting. History of no bowel movement for 48 hours. Diagnosed intestinal obstruction. Exploratory did not reveal any definite obstruction, left kidney found large. Post-operatively pyelogram showed a large hydronephrosis with calculi. This case illustrates the gastrointestinal crisis which may occur when a calculus suddenly blocks the ureter. This apparently is what happened in this patient.

Like others, he suffered operation for suspected acute intestinal obstruction when the condition was due to a hidden kidney condition.

CASE VIII: M. G. White female, aged 42, married. For years general abdominal symptoms, epigastric discomfort, bloating, nervousness, occipital headaches, intermittent pain, sticking in character, in the lower abdomen. At times right, at times left. Had complete work-up with gastro-intestinal studies, cholecystogram studies, psychiatric interviews, all done at one of our large medical centers. No evaluation of the genito-urinary condition. Kidney was not even mentioned. Pyelograms here show bilateral hydronephrosis improved with repeated cystoscopes, dilatation and urinary antiseptics.

COMMENT: The above cases were picked up in a routine private practice, evaluating symptoms and signs in patients as they presented themselves in a private surgical office.

CONCLUSION: In any and all abdominal conditions with which the patient presents himself in a general medical or surgical practice, the kidney must be thought of as a possible source and seat of pathology underlying the patient's complaints. The important relationship of urology and gynecology is again emphasized and that the two are so intimately related that they cannot be separated.

The \$161,572,811 paid to hospitals by non-profit Blue Cross Plans for care of Blue Cross members during the first six months of 1949, represented the largest percentage of income these 90 hospital care Plans have paid for members' care during any previous six-month period, the Blue Cross Commission of the American Hospital Association, Chicago, has reported. Total income of Plans for this period amounted to \$184,350,857, of which 87.64 per cent was paid to hospitals.

With expenditure of only 9.11 per cent of total income, or \$16,796,610, for operating expense during the same period (January 1 through June 30, 1949), Blue Cross Plans established an all-time record for low-cost administration of hospital care to their more than 33,500,000 members.

Thoracic Injuries*

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THIS title was chosen because every general practitioner or surgeon in our Southland comes in contact with chest injuries, whether he is interested in them or not, due to the adeptness of the Mississippi negro with the pen knife or razor, and the increasing automobile accidents. During the first several years of my practice I stood at the foot of the bed and watched patients die of preventable causes following thoracic wounds. You will remember that the first pneumectomy was not performed until 1933, simultaneously almost, by Dr. Graham at Washington University and Dr. Reinholff of the Johns Hopkins University. This was really the birth of the wide understanding of the physiology of the chest. My knowledge of chest surgery has necessarily been acquired subsequent to my days of formal hospital training.

Simple contusions and lacerations of the chest wall are treated by the same general surgical principles as wounds elsewhere; namely, wash thoroughly open wounds and suture. One special precaution is, never probe these wounds as you may convert a simple wound into a pleural cavity wound; or you might cause secondary hemorrhage or invite infection. It is not necessary to suture any deep muscles. A suture through the skin is adequate, as cut muscles in this region do not tend to retract. If one cannot be certain whether the thoracic cavity has been entered, instead of injudicious probing, keep the patient in the hospital for observation for twenty-four hours.

Nonpenetrating injuries of the chest are not nearly so frequent or so serious as the penetrating wounds. Death, however, may occur from failure to recognize and treat the underlying intrathoracic lesions. This type of injury occurs after compression automobile injury or blast injuries of exploding shells, after coughing or after straining. The child with an elastic resilient chest wall is prone to have a nonpenetrating pulmonary injury. The mech-

anism is that of a positive pressure exerted on the chest wall plus an upswing of the diaphragm with a closed epiglottis causing increased intrathoracic pressure with contusion or laceration of alveolar tissue. The symptoms are chiefly shock, hemoptysis, fast pulse and dyspnea with a frothy sputum. Immediate treatment is oxygen plus massive doses of atropine. Beware of sedatives and infusions, as they may increase pulmonary edema. One must also be cognizant of the fact that a tension pneumothorax, a mediastinal emphysema, hemorrhage or atelectasis may be caused by nonpenetrating injuries. These entities will all be discussed a little later.

Patients coming in with symptoms of fractured ribs are very common. Personally I have never seen a rib fractured which did not heal; hence, if one is certain no intrathoracic viscera is injured, x-ray pictures will not influence the treatment. Strap the ribs or use intercostal block. A suitable strapping is to have patient sit on a revolving stool, and to paint the skin with compound tincture of benzoin to prevent reaction from adhesive plaster; then have the patient exhale, and place a circular piece of three-inch adhesive completely around the lower thoracic cage, by having patient whirl on the stool. If intercostal block is used, simply inject novocain above and below the rib margin, posterior to the site of fracture. This in my experience is not as satisfactory as strapping but does have a place particularly in one who reacts to adhesive or where immobilization is contraindicated. The sitting position is more comfortable than the recumbent position. Do not use opiates as these drugs abolish the cough reflex. In multiple rib fractures one may get paradoxical respiration. By this we mean the chest wall contracts during inspiration. This is a distressing symptom, and may cause a fatality if not remedied immediately. The third and fifth ribs may be clasped with a towel clamp close to the sternal rib margin and attached to about five pounds of weight using an overhead balance traction apparatus.

Tension pneumothorax is due to any type of lesion with a valve action which allows air

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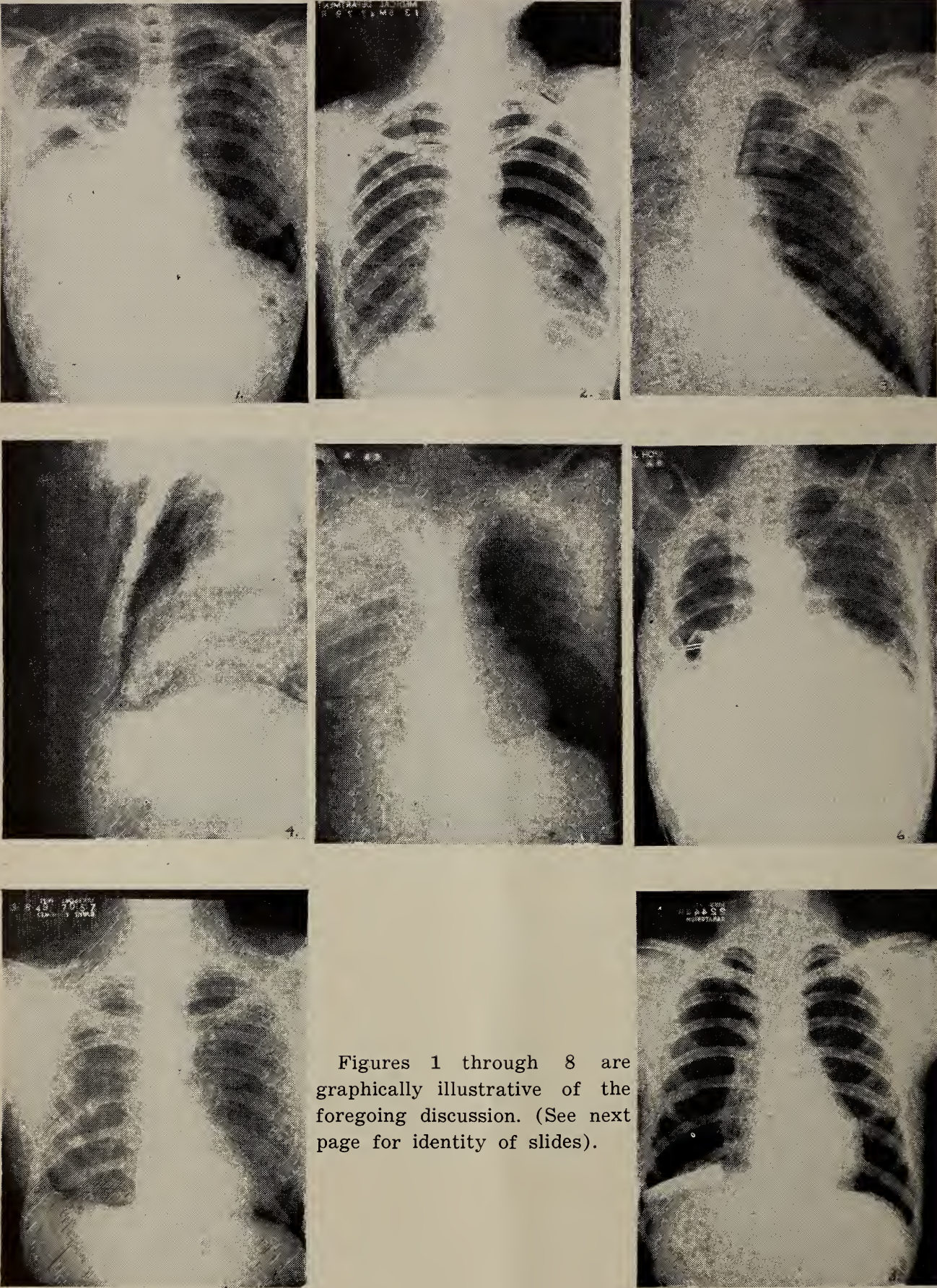
to enter the pleural cavity but prevents its escape. It may be due to a lesion of the bronchial tree from nonpenetrating wounds already alluded to; or to sucking wounds of the chest from open lacerations. The intrapulmonary lesions and the small perforating lesions cause a mediastinal shift with collapse of the lung on the involved side and a partial collapse on the uninvolved side. This causes a pressure which impairs the filling of the vena cava. If we have a large sucking wound, we get an immediate collapse of lung on the involved side and a shifting of mediastinum with each breath. This serious result we call a mediastinal flutter. Symptoms of sucking wounds are those of increased venous pressure, thready pulse, labored respiration, absence of respiration on involved side, deviation trachea away from involved side, and x-ray evidence of collapsed lung. Treatment of those due to nonpenetrating wounds leans mainly on not forgetting they can occur. Close all sucking wounds immediately. Tell the nurse when she calls you, to put on air tight bandage until it can be sutured. If the wound be a large one, you may have to utilize muscles to patch up holes or the diaphragm may be available if the wound is in lower chest wall. Aspirate air with a needle if air reaccumulates, then leave in needle with connection of rubber tube, which is immersed under water. These lesions when recognized and treated give spectacular results in otherwise frequently fatal injuries.

Pulmonary emphysema frequently follows a tension pneumothorax. There are two types of emphysema, the cutaneous or surgical, and the mediastinal. In the cutaneous emphysema, air escapes into tissue and may travel even into the feet. Some investigators think the air follows the course of blood vessels. The seriousness associated with this type is not to mistake it with a gas gangrene. Cutaneous emphysema heals without any intervention. The mediastinal emphysema is very serious. The large veins of the neck require a pressure below that of the atmosphere in order to fill. It takes very little increased pressure in the mediastinum to cause a circulatory failure. The symptoms are distended neck veins, suprasternal emphysema, hyperresonance over sternum with x-ray evidence of substernal air. Air may be aspirated through the third interspace with a needle and syringe; if this does not relieve the condition, do not hesitate to make a collar incision, separate the ribbon muscles and invade the

superior mediastinum. This procedure is often life saving.

Hemothorax is not the emergency that pulmonary emphysema or tension pneumothorax is, but probably causes more deaths. Even if internal mammary artery is severed it will not be fatal for about three hours. The deceiving factor is that exsanguination may occur intrapleurally without any serious respiratory symptoms. Fortunately most hemorrhages cease spontaneously. In external bleeding coagulation by the abundant chest muscles plays an important factor. Hemorrhage from the lung stops upon collapse of lung as the pulmonary tension within vessels is only about one-sixth that of the systemic circulation. The treatment of interpleural bleeding is still controversial. Some believe in watching the patient's symptoms and physical signs as criteria for intervention. The ones I have handled, I have aspirated and replaced with twice as much air as blood removed. This I believe is the more accurate way of estimating blood loss. Blood is easily aspirated, because it becomes defibrinated by heart and respiratory action. If blood is replaced intravenously be sure to filter well. The fibrinous part of the blood sticks to the lung wall and often causes a constricting band which may prevent the lung from re-expanding. Those who do not aspirate early should keep this in mind: If you aspirate late certainly leave no air in the pleural cavity as you may further invite permanent lung collapse. If bleeding does not cease spontaneously be prepared to do a systematic major surgical search in main operating room with differential anaesthesia if necessary. If stab is just lateral to sternum and the internal mammary found severed, ligate both above and below as it anastomoses with inferior epigastric artery. If bleeding appears to be intercostal, it is best to resect a portion of rib as the posterior intercostal artery is below and beneath the posterior surface of the rib and not readily accessible. If no cause is found externally, the only choice is a thoracotomy. If one enters the pleural cavity, he may do so with safety provided he is familiar with the technic of pneumonectomy. Usually, however, suturing of a portion of the lung is all that is necessary.

Some dogmatically state that if more than three aspirations of hemothorax are done that empyema will follow. The mortality of empyema has been greatly reduced by early closed drainage and late surgery. Use closed drain-



Figures 1 through 8 are graphically illustrative of the foregoing discussion. (See next page for identity of slides).

age on all cases until we are certain the mediastinum is fixed. It requires about fourteen days usually; however, where we have a thick pus, we may assume that there is a sterile mediastinum. Closed drainage is accomplished through the trachea thrust in about the eighth interspace in midaxillary line or fourth interspace in anterior chest wall. After putting in a rubber catheter the end is immersed under water, or attached to a Wangensteen apparatus for constant suction. Open drainage is accomplished by resecting a portion of the rib and putting in a rubber tube about 1.5-2 cm. in diameter. Antibiotics and biochemicals are of little avail locally with the exception of streptomycin in pyocyanase in infection; but should be employed to the hilt systematically.

After hemothorax or empyema in which the lung fails to re-expand, we have a very useful procedure called decortication. In hemothorax, if after three to six weeks the lung is still collapsed, or after all attempts of adequate open drainage of empyema fail to obliterate the cavity, then the operation is indicated. Since little is mentioned about the technic in most text books, I will briefly describe. Dr. Paul Sanger popularized this method of treatment during the recent war. Using intratracheal cyclopropane anaesthesia, a posterolateral incision is made resecting the sixth rib. After entering the pleural cavity, the collapsed lung will have a thick fibrinofibrous membrane which in hemothorax or early empyema will readily strip off the lung. The entire lung must be stripped. The pleural cavity is filled with saline, and the anaesthetist is asked to apply positive pressure to check for leaks and see that the lung re-expands. The wound is then sutured using a closed type of drainage.

In pleura-abdominal wounds take care of the chest emergencies first; if one is suspicious of perforated abdominal viscus, then explore the abdomen as soon as condition permits.

Foreign bodies per se do not justify thoracotomy. Treat foreign bodies only when they produce hemorrhage, obstruction or infection. Even foreign bodies need not be removed until the patient has entirely recovered and can be sent to a chest center for the operation as an elective procedure.

Figure 1. Demonstrates a contusion of the lung or hemorrhage in the pleural cavity. You may see this condition in nonpenetrating

wounds. Observation is all that was indicated for an uneventful recovery.

Figure 2. Tension pneumothorax. The lung is collapsed and mediastinum is pushed to opposite side. The diaphragm is not elevated. Aspiration was a life-saving measure here.

Figure 3. Pulmonary emphysema. You see air in tissue, also along the edge of the sternum.

Figure 4. Lateral view shows air under sternum. A collar incision and opening of anterior mediastinum was necessary to save a life.

Figure 5. Marked hemothorax.

Figure 6. Even with adequate open drainage, the lung fails to re-expand.

Figure 7. Re-expansion of lung after doing a decortication.

Figure 8. Foreign body. Automobile handle is seen in base of lung. This picture taken several years after injury. This patient won the featherweight boxing championship with this foreign body in the pleural cavity, originally he had a sucking wound of the thorax which was closed as a life-saving procedure. Subsequent x-ray and fluoroscopy examination failed to reveal this piece of steel because of hemothorax. It was removed by Dr. Boswell's group at Sanatorium.

Summary. 1. Arrest hemorrhage. 2. Correct disturbances in cardio-respiratory physiology such as paradoxical respiration, tension pneumothorax and mediastinal emphysema. 3. Leave asymptomatic foreign bodies alone. Prevent infection. 5. Do not allow a lung to stay collapsed for long periods of time.

Discussion

George E. Twente, M.D., (Jackson)—In considering thoracic injuries it is well to keep in mind several anatomical and physiological facts that influence the diagnosis, prognosis, and treatment of these injuries.

From an anatomical standpoint, consideration must be given to the large number of thin-walled arteries and veins that are present not only in the mediastinum and lungs but in the chest wall as well. Attention must be directed to the difference in pressure in the two arterial systems, the peripheral and the pulmonary. The method of arresting hemorrhage in thoracic wounds differs with the type of blood vessel injured. If a laceration of the lung causes hemorrhage from the pulmonary system owing to the low pressure in the pulmonary vessels resulting in hemothorax, the bleeding can be arrested by compression of

the lung either by the resulting hemothorax or by induced pneumothorax; however, when an injury occurs to the heart, aorta, subclavian, internal mammary or intercostal arteries hemothorax may occur which will not subside by compression of the lung. Because the pressure in the systemic arterial system is high compared to that in the pulmonary system, bleeding from the systemic arterial vessels will be much more vigorous than that from the pulmonary vessels. In case ligation of the pulmonary artery is necessary because of hemorrhage from the lung due to penetrating or perforating wounds, it is well to know that the bronchial artery will supply sufficient arterial blood to prevent necrosis and gangrene of the blood.

The pulmonary artery carries mainly venous blood with low oxygen content, whereas the reverse is true of the bronchial artery. Cutting off of the flow of blood from the pulmonary arterial system will therefore not affect the lung from a nutritional standpoint but of course will prevent its functioning from the standpoint of oxygenation of the blood brought to the lung. Circulation in the lung after ligation of the pulmonary artery is switched from an essentially venous circulation of relatively low oxygen tension to an arterial circulation of high oxygen tension. The development of the collateral circulation through the bronchial artery is rapid and extensive following ligation of the pulmonary artery.

Bleeding from the venous structures of the thorax, including the superior and inferior venae cavae, innominate, azygos and hemiazygos, intercostals, and subclavian veins which may be considered the peripheral—venous system, presents a different picture from the control of bleeding from the pulmonary veins. Because of the vestigial character of the bronchial veins, the blood must be carried away from the lungs by the superior and inferior pulmonary veins. Ligation of either of the pulmonary veins will result in moist gangrene of that portion of the lung drained by the ligated vein and thus if either the superior or inferior pulmonary veins need be ligated it will also be necessary to remove the portion of lung drained by that particular vein.

Efforts must also be made to maintain the integrity and rigidity of the thorax to maintain normal respiration. This has been well covered in the paper presented and need not be reiterated.

Hence in non-penetrating injuries of the

chest there are three complications as have been mentioned which should be stressed as they may cause unfavorable results. These are: 1) Intrathoracic hemorrhage, 2) a dangerous degree of tension pneumothorax, and 3) mediastinal emphysema.

Dr. Hewes has discussed these conditions very thoroughly. I would like to emphasize the early treatment of each, and also to note that mediastinal emphysema usually occurs after laceration of the trachea of a main bronchus. If aspiration of the air from tension pneumothorax does not relieve the condition, then thoracotomy with closure of the defect in the trachea or bronchus and stitching of the lacerated lung is advisable. The same applies to injuries of the esophagus. In hemothorax in which the bleeding is slow and of small amount, aspiration is unnecessary and the blood will be absorbed in a short while. When aspiration is necessary I do not believe it is necessary to aspirate all the blood, but that remaining may aid in lung compression and then decrease the continued bleeding. If the bleeding does not subside with lung compression it is probably due to the systemic or peripheral vessels and exploratory thoracotomy is indicated.

Dr. Hewes has nicely emphasized the necessity of closing sucking wounds promptly, as well as the treatment of empyema and the unexpanded lung.

Wounds to the thorax may also be accompanied by injuries to the heart. Any severe blow over the precordium may produce contusion of the heart. The ribs and sternum need not be broken. The signs and symptoms vary greatly, usually no serious symptoms occurring unrecognized. Weakness is the most common symptom, appearing immediately after injury in some instances and days later in others. A fall in blood pressure occurs. Pain is usually present and may radiate down the arm as in angina. Tachycardia is the rule and may last minutes, hours, or months. Electrocardiographs usually appear. Death may occur from ventricular standstill, fibrillation or cardiac rupture.

After the diagnosis of cardiac contusion is made the patient should be observed carefully, while at complete rest, for acute compression. If it occurs the patient is kept in bed for six weeks and treated as if he had coronary thrombosis. Delayed hemorrhage may occur and pericardial effusion. This may be aspirated.

I have observed this condition twice that

I am aware of. The first case was a 56-year-old male who suffered a contusion of the chest along with a fracture of the patella for which he was hospitalized. On the sixth hospital day he developed the previous mentioned symptoms of precordial pain, fibrillation, with electrocardiographic changes. He recovered. The second case was of an adult male who seemingly suffered a moderate steering wheel contusion of the chest. He was hospitalized for two days and discharged. He continued to complain of weakness and some precordial pain but insisted on going home. He died supposedly of a coronary one month later.

Penetrating wounds involving the heart demand immediate surgery but these too may be sutured and recovery occur.

In the treatment of fractured ribs I should like to mention the use of paravertebral novocaine block. One injection may relieve pain for twelve to twenty-four and thirty-six hours and may be repeated as necessary. Tapping at times becomes very uncomfortable.

Dr. Eugene Bush (Laurel)—Dr. Hewes discusses his subject as a general surgeon and points out very well that there are a number of live-saving measures that the general surgeon can and must do in order to give his patients the best chances for recovery in the shortest time. He further points out that after emergency procedures have been performed, the patient is in better condition for more extensive surgery that is better performed as an elective procedure at a later date in a hospital better staffed and equipped for the work.

We may say that primarily the danger in most chest injuries is the sudden disturbance of the delicately balanced intrathoracic pressure that interferes with the physics of respiration and the physiology of the lung and heart circulation. Therefore in all chest injuries, regardless of how minor they may appear, there is still the possibility of serious complications that may be prevented if the individual case is observed and studied thoroughly at frequent intervals. Shock, hemorrhage, and infection are ever-present

hazards of all injuries and must also be considered in chest injuries.

A rib belt made of a wide piece of cloth that may be fastened with buckles is an advantage over adhesive strapping and may be opened for repeated examinations without much effort or discomfort to the patient. Thorough examinations without disturbing the patient is imperative and should be repeated at frequent intervals.

Narcotics should be used sparingly, but should be used in sufficient doses to quiet the patient because the restless fighting patient is in more danger than the patient that has received sufficient narcotics to be comfortable and cooperative.

Early re-expansion of the lung is a means of early restoration of normal respiratory efficiency. This is accomplished in most cases by early and repeated tapping of the hemothorax or hemopneumothorax. I do not feel that it is possible to overemphasize the importance of obtaining a "dry pleura" as soon as possible whether it be by repeated tapping, closed drainage, or exploration with tight closure and closed drainage. If infection should occur in a "dry pleura" it is localized and is not near as serious as an extensive empyema.

Repeated transfusions of citrated blood are essential in order to combat shock and hemorrhage and to improve the general condition of the patient to the extent that necessary surgery may be performed.

Certain conditions may be handled under local anesthesia, but positive pressure anesthesia is necessary and nearly essential whenever active extensive surgical intervention is indicated.

A good airway, oxygen, blood, and good nursing care are essentials postoperatively. Penicillin and streptomycin hypodermically and sulfadiazine either by mouth or by vein should all be given with the hope of controlling or preventing infections.

Dr. Hewes (closing)—I am particularly glad head injuries were mentioned, because with a fifteen-minute time limit it didn't allow me time to touch that.

Medullary Pin Fixation of Fractures Near Joints*

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and

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ARTICLE II

MEDULLARY fixation of fractures in long bones is generally considered insecure near the extremities of a bone. Certain techniques, however, have now been developed whereby it is possible to fix satisfactorily a great many fractures occurring in the region of a joint. Although simple pinning of condyles is not new, it has now been found that by the use of pins of considerable length, this simple pinning can be combined with intramedullary fixation.

Fractures of the Neck of the Humerus

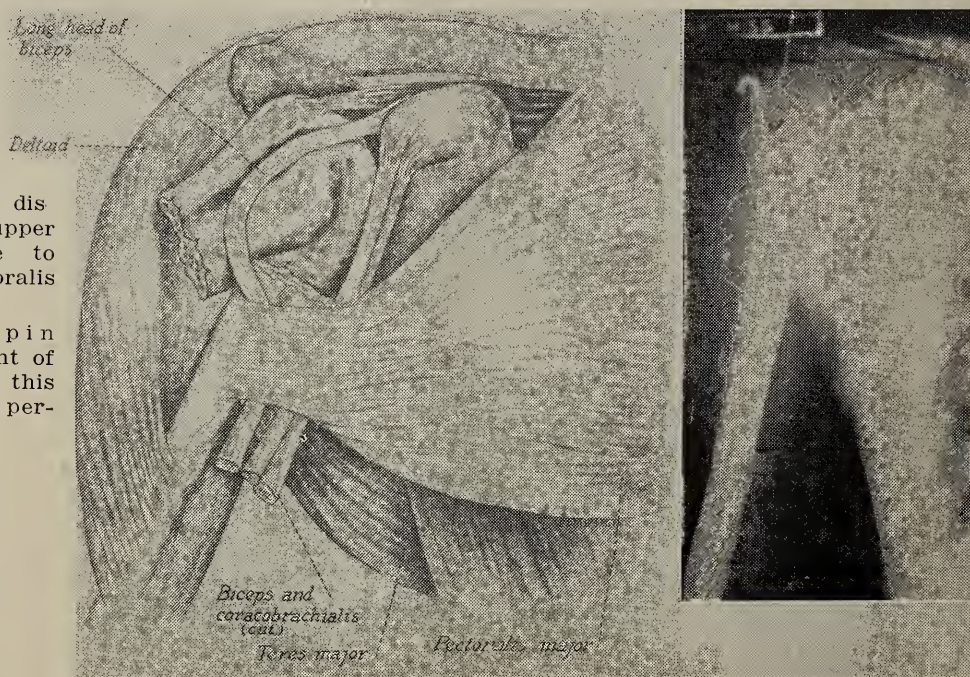
In a previous article⁹, the technique of medullary pinning of fractures of the humeral shaft has been described, pointing out that the pin is best introduced through a drill hole in the superior portion of the tuberosity of the

humerus. In fractures of the neck of the humerus, the pin is passed in the same fashion as for the shaft.

In many instances, a hanging cast provides adequate treatment and, in young adults without marked displacement, the hanging cast is probably the method of preference. These fractures heal very kindly, but even simple fractures of the neck without marked displacement are apt to show evidence of displacement after ten days or two weeks because the pectoralis major muscle pulls the shaft medially toward the axilla. The large majority of these fractures, however, occur in individuals in their later years and, in these cases, intramedullary fixation accomplishes the purpose more admirably. (Figure 1).

Figure 1. (a) Drawing displacement fracture upper end of humerus due to medial pull of pectoralis major muscle.

(b) Longitudinal pin maintains the alignment of the bone by resisting this pull, at the same time permitting free function.



A pin of either two-sixteenths or three-sixteenths inch diameter and of suitable length can be introduced very easily by making a one-half inch stab wound over the superior portion of the prominence of the tuberosity, which can usually be palpated very easily, in the line of the fibers of the deltoid muscle.

Through this stab wound, a drill hole the size of the pin chosen is made through the cortex of the bone only. The cortex of the humerus in its upper portion is funnel-shaped and no difficulty is usually encountered in pushing the pin downward into the medullary canal. Even though some deformity is present,

this is usually corrected by passage of the pin which exerts three point pressure. The head of the pin exerts a pressure medially against the head of the humerus, the point of the pin also makes a pressure medially in the lower shaft, and the shank of the pin exerts a lateral pressure against the upper portion of the shaft so that the continuous pull of the pectoralis major is resisted and can no longer displace the shaft medially. Unless there is marked displacement, an open incision is not necessary.

In comminuted fractures of this region, an open incision frequently is necessary, but satisfactory fixation can be secured providing there is a sizable bone fragment with which the head of the pin can become engaged. In ten cases of fracture of the upper end of humerus, many of which were badly comminuted, we have not yet found it necessary to use any form of external immobilization.

Fractures of the Humeral Condyles

Our experience with the pinning of fractures in this region is relatively limited at the present time. The thinness of the bone in this region makes the passage of the pin usually difficult but, generally, these fractures can be treated in the same manner as will be described below for fractures of the condyles of the femur and of the tibia. Pins of three thirty-seconds inch diameter are used in this region. (Figure 2)

driven through cancellous bone and the direction in which the point travels can be influenced by rotating the pin with a pair of pliers. Pins are driven upward into the medullary canal from points of entrance at the external condyle or the region of the internal condyle. A preliminary drill hole is essential. It is almost impossible to drive the pin accurately in cancellous bone when it is driven through the cortex without this preliminary drill hole.

Olecranon Process of the Ulna

Our first report on the use of the axial fixation advocated its use in comminuted fractures of the upper third of the ulna.² In this type fracture, it accomplishes the purpose beautifully even in badly fragmented shafts. In the Monteggia fracture, the head of the radius, which is often dislocated, is usually held securely in place by this procedure.

While in most regions of the body the natural muscle pulls result in firm impaction of the fractured surfaces, quite the opposite is true in the olecranon. In fractures of the olecranon, the triceps muscle exerts an upward force upon the fragment to produce distraction. We have seen two instances of fibrous union occur in olecranon fractures in which this procedure alone was used. If a medullary pin is to be used for this fracture, it should be combined with wiring to assure snug bone contact.

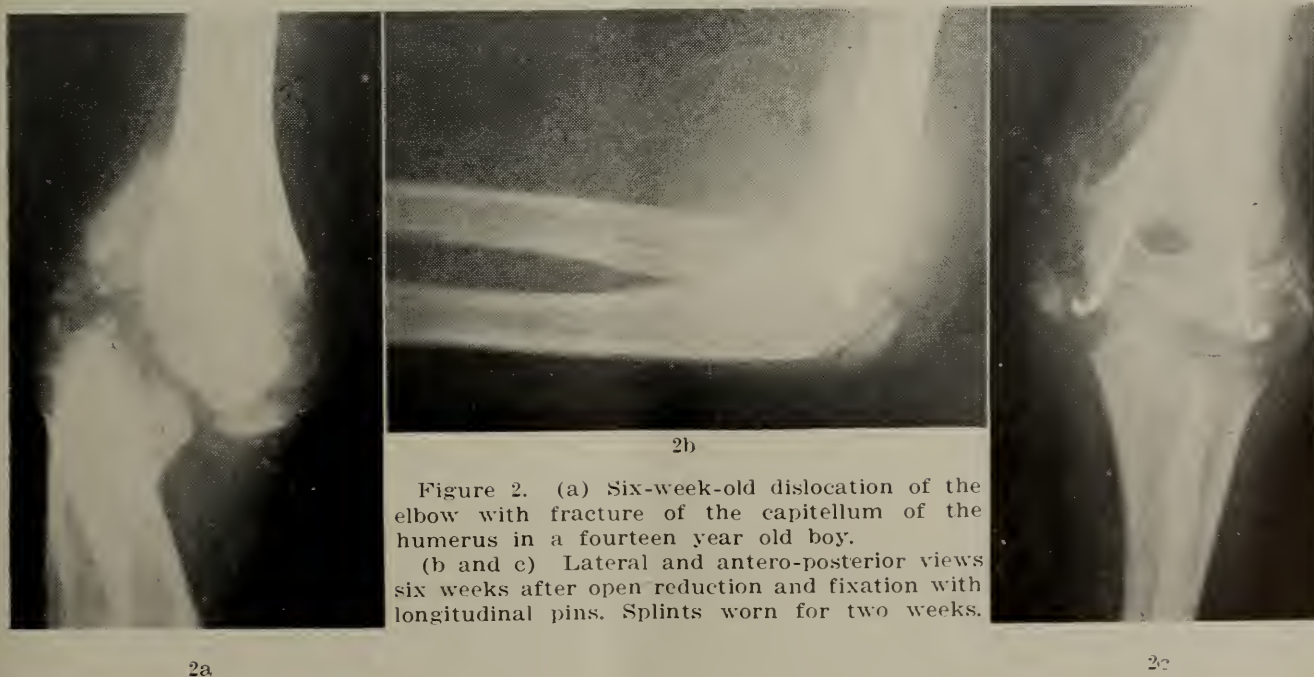


Figure 2. (a) Six-week-old dislocation of the elbow with fracture of the capitulum of the humerus in a fourteen year old boy. (b and c) Lateral and antero-posterior views six weeks after open reduction and fixation with longitudinal pins. Splints worn for two weeks.

2a

2c

The longitudinal pin, by virtue of its sled runner point, tends to travel in an arc when

Colles Fracture

In a previous report¹⁰, the technique and

indications for pinning this fracture have been discussed. Our series now totals eighteen cases. In one case, a marked silver-fork deformity occurred, due to the fact that the bone was badly comminuted and secure anchorage was not obtained in the distal fragment and the point of the pin engaged the distal fragment too far to the volar side. Plaster splints should have been used in this case.

Before utilizing pin fixation for Colles fracture, it is essential that the surgeon become acquainted with the topographical anatomy in the area. At times, the length of the styloid of the radius has been exaggerated by the procedure, but this has not been a disagreeable feature and our results obtained by the method have been far superior to those previously obtained by closed reduction and plaster splints, both as to function and physical appearance of the wrist.

Intertrochanteric Fractures of the Femur

In our preceding articles¹¹, the use of crossed pins for fractures in this region was shown but the technique was not described. This method consists of using a Smith-Petersen nail in the neck of the femur which is securely fixed to a longitudinal pin which is passed axially down the medullary canal of the shaft. This method has been used by us in ten cases and was first found rather difficult to apply, but we now feel that it can be performed more simply and with a great deal less surgical trauma than the application of the blade plate or Smith-Petersen nail with anchor plate.

The apparatus consists of a Smith-Petersen nail and a short curved longitudinal pin three and one-half to four inches in length and three-sixteenths inch in diameter. The nail and pin, after the completion of the operation, have been securely bolted together by a specially constructed sleeve headed bolt of Type 316 stainless steel which screws into the Smith-Petersen nail. (Figure 3)

The crossed pin is not applicable to all intertrochanteric fractures as the bone must be unfractured at the point of entrance of the nail and pin respectively.

Technique: Closed reduction is accomplished on the fracture table. A Smith-Petersen nail is then driven into the neck of the femur in the usual manner over a guide wire, except that the nail is passed percutaneously through a stab wound rather than an open incision. After the Smith-Petersen nail is found to be

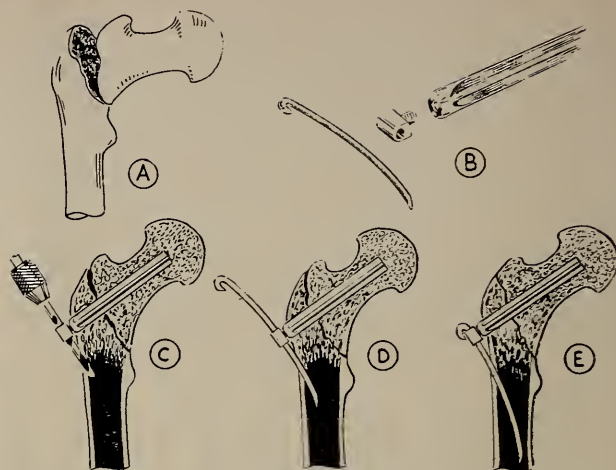


Figure 3. (a) Drawing showing angulation following intertrochanteric fracture.

(b) Shows the curved longitudinal pin and the sleeve headed bolt which are used in conjunction with the Smith-Petersen nail for the fixation of this fracture.

(c) Closed reduction has been accomplished and the Smith-Petersen nail has been introduced percutaneously. A minimal incision has been made and the sleeve headed bolt fixed to the Smith-Petersen nail. An oblique drill hole, three-sixteenths inch in diameter, is being made in the cortex of the bone by passing the drill through the opening in the sleeve headed bolt.

(d) The curved pin is being driven through the sleeve headed bolt and into the oblique drill hole and into the medullary canal of the shaft.

(e) Fixation has been completed. Note that compression of the fractured surfaces is occurring—the result of the spring type pressure of the curved pin.

properly placed, the incision is enlarged to a length of two or three inches, dependent upon the size of the individual. It has been found that the operation can be carried out satisfactorily through a two inch incision in thin subjects. It is unnecessary to expose the upper end of the shaft of the femur, the need being only to expose a small area on the lateral surface of the shaft for about one inch below the head of the Smith-Petersen nail. The sleeve headed bolt is then screwed into the head of the Smith-Petersen nail. The sleeve headed bolt is then screwed into the head of the Smith-Petersen nail so that the channel in the head is directed toward the medullary canal of the shaft.

A three-sixteenth inch drill is then passed through the sleeved head until it strikes the lateral cortex of the shaft and, in this fashion, an oblique drill hole is made in the lateral wall of the bone. The specially curved longitudinal pin is then passed through the sleeved head and into the oblique drill hole of the shaft and driven on until the hooked head of the pin grasps the sleeved head of the Smith-Petersen nail. As this pin is driven, it is felt to engage

very snugly in the bone, resulting in secure fixation in properly selected cases. It might be found a distinct advantage in multiple fractures of the femur involving both the neck or trochanteric region and the shaft of the bone.

If the oblique drill hole is placed too transversely, it might be necessary to use a pin of shorter length because the point might engage the far cortex rather than glide down the canal as desired.

At the present time, we have had no occasion to remove this apparatus and it is possible that some difficulty may be encountered in its removal. It can very likely be removed satisfactorily by first extracting the longitudinal pin and then withdrawing the Smith-Petersen nail.

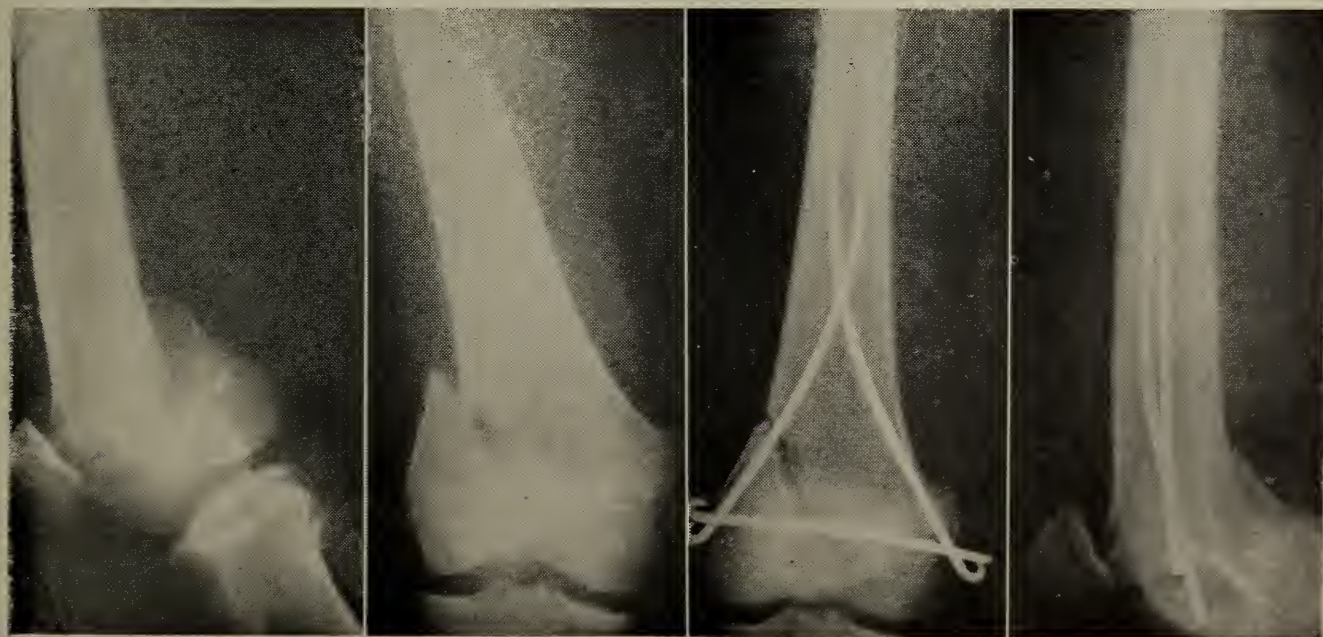
In none of these cases has external immobilization been considered necessary.

Supra-Condylar Fracture of the Femur

Four cases of supra-condylar fractures of the femur have been treated by driving pins upward into the medullary canal of the femur from points of entrance in the lower portion

upon the size of the individual. Frequently, the reduction can be accomplished by closed methods and pins driven upward into the bone blindly through small stab wounds in the skin. (Figure 4) It must be borne in mind that an oblique drill hole in the cortex is essential to accurately guide the pin and that the pin has a tendency, in passing through cancellous bone, particularly in young individuals, to travel in a curved line because of the sled runner point. If difficulty is encountered in introducing the pin, the pointed end may be given a slight curve with a bending iron. It should be pointed out that the extremities of the bone in aged individuals is relatively soft and hollow and that, in younger individuals, considerable more resistance is offered to the passage of the pin through cancellous bone.

The two pins are driven simultaneously as they enter the medullary canal. The points cross so that each sled runner strikes the opposite cortex upon the surface of which it will glide up the medullary canal. As has been pointed out, these pins have a spring type quality and as the pins are driven into the



4a

4b

4c

4d

Figure 4. (a and b) Lateral and antero-posterior views comminuted fractures condyles of femur of boy aged sixteen. Oblique fracture across external condyle with separation of the medial condyle.

(c and d) Antero-posterior and lateral views after reduction and triple pin fixation. Closed reduction was accomplished except a two inch incision was necessitated to allow introduction of clamp to overcome backward displacement of upper end of medial condyle. Pins introduced through stab wounds and heads buried subcutaneously. No external immobilization. Ninety degree flexion possible in six weeks. Note medial compression of fragments from spring type pressure of pins.

of the lateral surfaces of the condyles. For this purpose, two pins, ten to twelve inches in length and in diameter of three-sixteenths or two-sixteenths inch are used, dependent

upon the size of the individual. Frequently, the reduction can be accomplished by closed methods and pins driven upward into the bone blindly through small stab wounds in the skin. (Figure 4) It must be borne in mind that an oblique drill hole in the cortex is essential to accurately guide the pin and that the pin has a tendency, in passing through cancellous bone, particularly in young individuals, to travel in a curved line because of the sled runner point. If difficulty is encountered in introducing the pin, the pointed end may be given a slight curve with a bending iron. It should be pointed out that the extremities of the bone in aged individuals is relatively soft and hollow and that, in younger individuals, considerable more resistance is offered to the passage of the pin through cancellous bone.

of the pin then exerting a medial pressure against the condyles of the femur in a spring like fashion. Because of the spring type pressure being exerted by the head of the pin, it should not be driven too deeply into the bone as the head might become imbedded in the condyles to such an extent that the removal of the pins would be difficult. However, this spring force exerted by the pin becomes a very desirable thing in the event of fracture of one or both condyles where its use tends to result in firm contact-compression of the fractured surfaces.

Fractures of the Femoral Condyles

After reduction has been accomplished by open or closed methods and the integrity of the articular surface has been restored, a single pin is driven transversely across the condyles to maintain this integrity. Following this procedure, the two pins are driven upward into the medullary canal according to the procedure just described. Fixation is usually so secure a plaster cast is not necessary.

Condyles of the Tibia

In a fracture of one condyle of the tibia, the fragment can usually be realigned by closed methods. Through a stab wound a two-sixteenths inch pin is driven transversely across the fracture line, one-half to three-fourths inch below the articular surface. This maintains the

integrity of the articular surface. About one-half or three-fourths inch from this point of entrance, an oblique drill hole is made and a second pin, either straight or curved at the pointed end, is driven downward into the medullary canal. Again, this three point pressure is secured and the pin exerts its spring type quality to result in secure fixation of the fragment with continuous compression of the fractured surface. (Figure 5)

In the event of inverted V or Y fractures involving both condyles, a third pin is utilized. (Figure 5e) First, the articular surface is restored and fixed by a transverse pin, then pins are introduced obliquely through each condyle and driven downward into the medullary canal. These pins are tapped in simultaneously with the mallet. Unless the fragments are comminuted or the fractures involve the upper portion of the shaft, fixation is usually secure enough that plaster casts are not needed. In these fractures, the joint is usually found filled with blood and this is aspirated at the beginning of the operation.

Ankle

Fractures of the ankle region and lower third of the tibia occur in a variety of forms which can tax the ingenuity of the surgeon, but most of these complex fractures of the ankle can be satisfactorily secured by pins without the need for plaster casts.

Internal Malleolus: It is difficult to pin the internal malleolus percutaneously because of the swelling that is present and the necessity of inverting the ankle to reposition the fragment. A one inch incision is made over the internal malleolus and torn ligamentous and periosteal tissue is usually found interposed between the fracture surfaces. This tissue is removed and the bone is repositioned and held in place by a towel tenaculum. An oblique drill hole is made through the tip of the malleolus, directed toward the medullary canal and a pin of three thirty-seconds inch in diameter of sufficient length to extend well into the tibia, is then inserted into this channel and tapped home with the mallet. However, a great deal of swelling is usually associated with ankle injuries of this type and it may be well to apply an elastoplast compression bandage with or without external plaster splints until the sutures are removed.

External Malleolus: The lower end of the fibula breaks in a variety of ways. When the lower end of the fibula is badly fragmented,

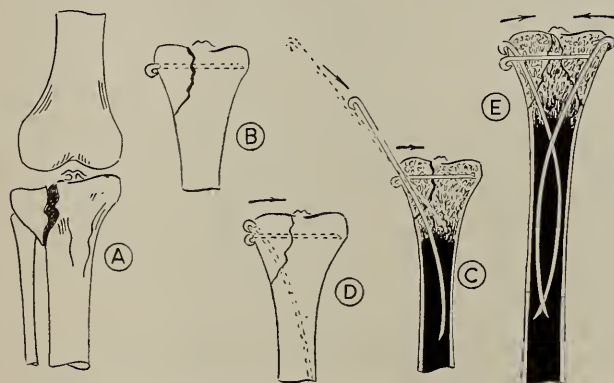


Figure 5. (a) Fracture external condyle of the tibia with downward and lateral displacement. (drawing).

(b) After closed reduction, integrity of articular surface preserved by transverse pin.

(c) Oblique pin being passed through fragment into medullary canal. The mechanics of its passage result in a spring force being exerted medially by the head to provide contact-compression of the fractured surfaces.

(d) Fixation completed.

(e) Shows the use of three pins for fixation of fractures of both condyles of the tibia. In many instances, immediate function can be permitted but, if fixation is not secure, plaster casts should be applied.



Figure 6. (a) Comminuted fractures both condyles and upper third of shaft of tibia.

(b and c) Closed reduction of the condyles. Pins introduced percutaneously. Small incision lower region of the fractures for circular wire fixation. Plaster cast was necessary for security of fixation.

a longitudinal pin can be driven upward in the fibula axially, if necessary, to fix the fragments, but a great deal of difficulty is sometimes encountered. In many individuals, there is no medullary canal at the lower end of the fibula and if there has been damage to the ligaments which join the fibula to the tibia, diastasis can be brought about by the passage of a straight rigid pin because the fibula is curved at this region. Should the pin be passed axially in the fibula, the end of the pin near the head should be given a moderate curve to allow for this normal contour of the bone.

Frequently, in bi-malleolar and tri-malleolar fractures, a great deal of the deformity is due to luxation and, after the deformity has been corrected by manipulation and the internal malleolus secured by the pin, the external malleolus tends to realign itself by the natural

ligament pull. The position of the external malleolus then can be secured by passing the pin obliquely from the external malleolus upward into the lower end of the tibia. (Figure 7) This is best accomplished by making an oblique drill hole through a stab wound which extends through the near cortex and far cortex of the fibula and through the near cortex of the tibia. Fixation is usually found to be so secure that again plaster casts or splints are not required.

Lower End of the Tibia

In similar manner, fractures involving the lower portion of the tibial shaft can often be fixed by passing pins upward in a curved fashion as in the ankle fractures. (Figure 8) Either pins of three-sixteenths or two sixteenths inch diameter might be used. Our present preference is to introduce the pins through drill holes, one placed in the tibia



7a

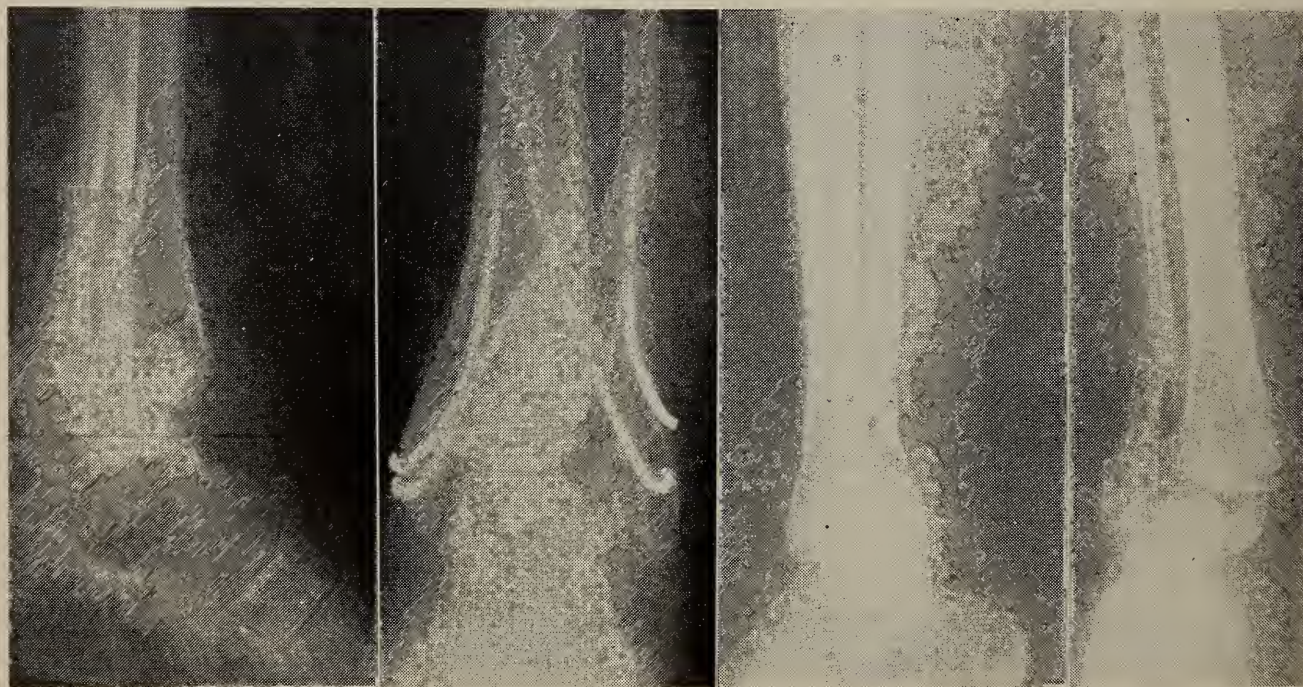
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Figure 7. (a) Bi-malleolar fracture of the ankle.

(b) After open reduction of internal malleolus and blind pinning of external malleolus. Fixation secure; no external immobilization; full range of motion on seventh day.

just above and anterior to the internal malleolus and the other through the external malleolus of the fibula in the manner just de-

scribed. Fixation of fractures in this region, while reasonably secure, frequently require the additional support of a cast or splints.

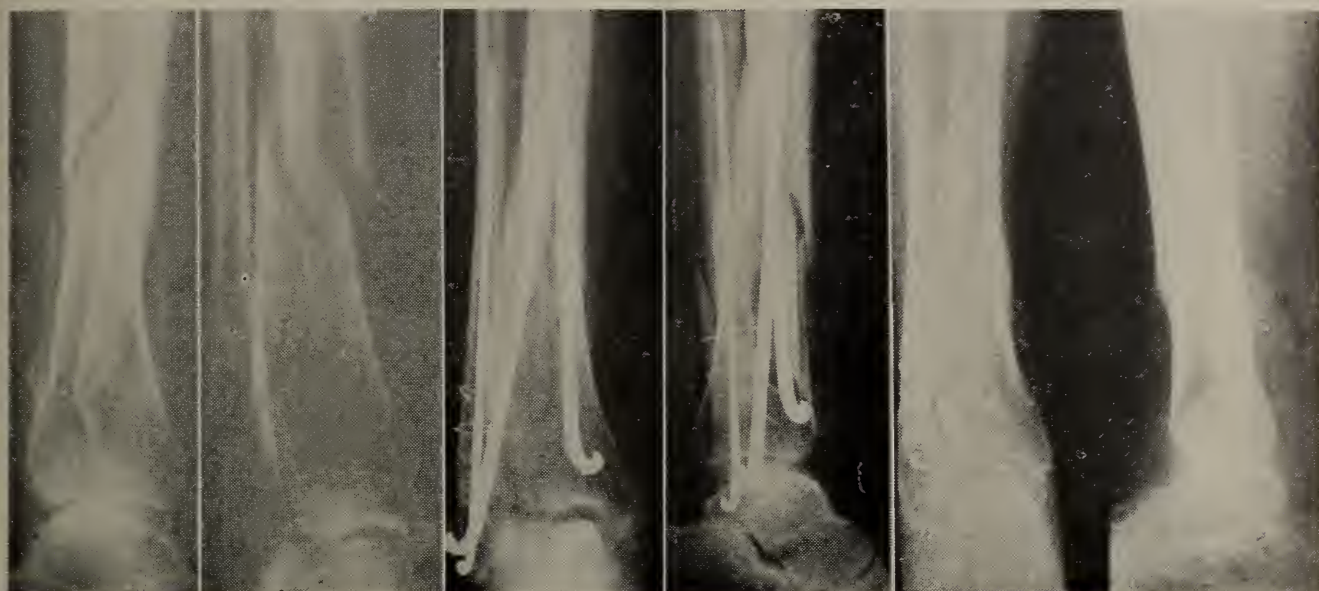


8b

8a

Figure 8. (a) Multiple fractures with dislocation of ankle. Three unsuccessful attempts at closed reduction because of inter-position of posterior tibial tendon.

(b) After multiple pinning, fixation was secure. No external immobilization was necessary.



9a

9b

9c

9d

Figure 9. (a) Antero-posterior and lateral views multiple comminuted fractures lower end of tibia and fibula.

(b and c) Antero-posterior and lateral views after pin fixation. There was severe soft tissue damage and the tibia was pinned blindly through small stab wounds. Open reduction of the fibula.

(d) Antero-posterior and lateral views five months after injury.

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In the entire United States about 270,000 mental patients are coming back into the community each year. The spread of the disease from those who may have contracted tuberculosis while in mental hospitals therefore becomes a community problem which we cannot afford to ignore. Robert J. Anderson, M.D., *Pub. Health Rep.*, Jan. 7, 1949.

Evaluation of the Syphilis Control Program*

Biloxi Area—Harrison County, Mississippi
1942-1948

ANDREW HEDMEG, M.D., M.P.H., F.A.P.H.A.
W. E. FROST¹

INTRODUCTION:

THE extremely high syphilis rate among southern Negroes has long been an accepted fact. Harrison County, Mississippi, like other river and port communities, has been considered an area with a higher rate of venereal disease infection than the more inland cities and counties in the state. Early in 1948 the Harrison County Health Department decided to make a survey of the local situation. All available past records were collected and carefully studied. It was found that prior to 1944 the overall Negro population in the county had a syphilis rate of 25 to 30 per cent as indicated by spot and special group surveys; further, the selective service figures showed a 34.7 per cent incidence in the Negro population of Harrison County, with a 36 per cent rate in Biloxi among the Negro male group examined during the war years, 1941-1944, this was a total of 764 men. It is recognized that the facts available for determining accurately the incidence of syphilis were not ideal, but these are the only ones which can be used as a base.

The syphilis control program of the Harrison County Health Department was begun in 1937. At that time the entire program was in the hands of one nurse and consisted of the examination of blood specimens for the diagnosis of syphilis and the treatment of cases by private physicians with the Health Department providing the drugs. The number of specimens obtained was small and did not cover a representative group of people; but fortunately for the present generation of local Negro children, these tests were largely confined to the "maternity clinic group," or women of child-bearing age. Little or no epidemiological or case follow-up work was attempted.

With the increased tempo of war preparedness and then war itself, the program was stepped up. In 1941 and early in 1942, the ground work of the present program was laid.

The first clinic for the treatment of venereal disease was opened in January 1943; and for a few months, the total clinic load was confined to a few indigent patients referred by the private physicians. Upon the establishment of the military camps and the quickening of public interest, a veritable tidal wave of syphilis patients engulfed existing facilities.

Eight clinics were rapidly set up in various parts of the county; and by the end of 1942, there had been 1211 cases of syphilis admitted to these clinics with an additional 428 cases reported by the private physicians.

The State Board of Health soon realized that the work of case-finding and case-holding was too great for the nurses to assume along with their other duties. Lay male workers were assigned to the task as special V. D. investigators. Two have been assigned to the county since 1943. The cooperation from the three adjacent military installations was all that could be desired. Keesler Field, which is within the city limits of Biloxi, arranged for special army investigators to work with the County Health Department personnel in venereal disease control. The volume of work continued to increase until in 1944 it became necessary to have a full time medical officer for the V.D. control work in this county. Through the cooperation of the State Board of Health, rapid treatment centers gradually took over the functions of diagnosis and treatment of syphilis. This made it possible for the V.D. investigator to devote more time to epidemiological case finding and a more effective education program. The above briefly summarized the historical development of the V.D. control program in this area.

SURVEY PLAN. Following the cessation of the emergency war time pressure in this program, it was felt that an evaluation of the work was desirable. Mass blood testing of the Negro population in Biloxi seemed to be the best method of measuring the current status of syphilis and indicating effectiveness of past efforts at control. Biloxi was chosen for two reasons; first, the Negro population is more nearly stable than in other sections of the

1. Director, Harrison County Health Department, Venereal Disease Investigator, Biloxi Area, Harrison County Health Department.

county²; second, it had the highest syphilis rate among the Negro selectees in the county during the war.

In order for this mass blood testing to include the same age and race group that the earlier records included, plans were drawn to cover the 15-50 age group with a representative proportion of the younger males and night club girls. Every Negro in Biloxi who was thought to have any degree of influence over any group was visited. Ministers, school teachers, civic leaders, and night club operators could each play an important part in securing a representative group of our Negro population.

It was felt that the role of the Health Department in controlling syphilis in the Negro was too predominant and that the time had come to make the race so acutely conscious of the amount of syphilis among them they would take a more active interest in the control program. The desirability of ridding the Negro of syphilis was stressed, and he was bluntly told that it was his problem. The ministers, the school teachers, the ditch diggers, and the night club operators all joined forces to form the Biloxi Negro Better Health Committee. The advantages of the Rapid Treatment Centers were explained to the committee. The V.D. investigator invited the group to name three of their members who could visit one of the centers. They selected a minister, a barber, and a laborer who went with the V.D. investigator to the Center in Meridian for a day's visit. A complete tour of the center was made after which the committee members, without escort, were allowed to visit the various wards. These representatives talked with any of the patients they cared to question, visited the kitchen, ate lunch with the patients, and watched while the afternoon treatments were given. With this working knowledge of the Treatment Center they were able to report to their committee just what they had learned. Their report to the committee was most favorable and did more to dispel any fears and to correct any adverse rumors about the Center than anything the investigator could have said or done.

Almost immediately the committee an-

nounced that it felt the first step was to find out how much syphilis it had to fight and that a mass survey was the method to use, and this was what the local Health Department was striving for. The members of the group circulated, signed, and presented the Health Department with a petition requesting a mass blood test and offering their help in conducting one. They made a house-to-house census of the Negro population, obtaining the name, age, sex, and occupation of every available Negro in Biloxi and offered it to the Health Department as a guide for the survey.

The mass blood-testing date was set for October 21-22, 1948, and again these committee members visited the homes, carrying the story of syphilis and its effects to every occupant. The actual blood testing was done with a surprising minimum of effort and no confusion, largely due to the efforts of the Negro leaders. A team of blood letters was assigned to the county for the project through the courtesy of the Division of Preventable Disease Control, Mississippi State Board of Health. All bloods were shipped to the State Hygienic Laboratory in Jackson for testing.

The dates of the V.D. survey coincided with a county-wide mobile tuberculosis x-ray survey. A considerable advantage was obtained by this due to the intensive publicity campaign which could be combined for these two projects in the Biloxi area. The local newspaper cooperated with timely articles and daily schedules of the testing stations. Radio broadcasts and spot announcements were utilized. Signs, posters, and hand bills were distributed, and sound trucks were used throughout the Negro sections on the survey dates.

Survey Analysis. This method of analysis was as follows: 1) all negative reports were tabulated and closed. 2) All positive and doubtful reports were set up in a special work file. 3) This file was checked against our Health Department records for any previous serological record or treatment history. All positive and doubtful reports on persons, who according to our records had completed an adequate course of therapy, were removed from this work file. Our criteria for classifying a case as adequately treated were: a completed and regularly taken recognized course of treatment together with a negative spinal test and a series of either negative or low titre serological follow-up tests at the recommended intervals. 4) We then investigated all of the

² The 1940 federal census gives Biloxi a Negro population 2580. It is estimated that the Negroes now number 2975. This estimate is based on figures available at the school board, employment office, various rental offices, utility services, etc. Health Department vital statistics for several years have shown the Negro production of the county at about 10 per cent of the total.

positive and doubtful reports on persons with a record of incomplete treatment in the Health Department. These individuals were brought to the clinic for a complete history, physical examination, and further quantitative serological study. In all cases where a history of further treatment was obtained, indicating that more treatment had been taken from some other clinic or from a private physician, we verified this fact before accepting it. This was quite a task as we had to contact the physicians involved and write to many clinics in this and other states for case records. From this investigation, we were able to close some of this group as having been adequately treated. The remainder of this group were classed as needing additional therapy and were placed under treatment. 5) In the final group there remained those positive and doubtful reactions on whom we had no previous case history or serologic record. All these individuals were brought to the clinic for study. A serologic quantitative follow-up was made, as well as a complete history and physical examination, leading to a final medical evaluation. Those cases diagnosed as either previously untreated or as needing additional treatment have been treated.

Interpretation. a. Prior to the final analysis of the results of the survey, we felt that a statistical study of the previous control activities would be valuable for comparative purposes. The following table covers these activities for the period 1942-1948. This tabulation includes the entire county.

TABLE I
TABLE OF ACTIVITIES 1942-1948

	1942	1943	1944	1945	1946	1947	1948	Total
Blood Tests	7154	9430	8707	9023	6780	5990	5869	52,953
Cases Treated	1211	1028	418	250	330	176	161	3,574
Primary and Secondary	63	23	24	65	179	94	40	488
Early Latent	560	610	222	104	97	55	81	1,729
Late Latent	562	381	136	66	35	17	32	1,229
Congenital	26	14	36	15	19	10	8	128

It is interesting to note the rise in the ratio of primary and secondary cases to total cases treated from 5 per cent in 1942, to 54 per cent in 1946, and 53 per cent in 1947.

The preceding table also shows that the bulk of the Early Latent and Late Latent infections were cared for before 1945, and that the Health Department was finding less

total syphilis by virtue of the fact that the back-log of old cases no longer existed.

Most significant are the figures on the congenital cases. From 1942 through 1945 we had no coordinated drive to locate this type of patient. For the past two years we have had weekly clinics for this purpose and have intensively sought out possible congenital cases; yet, fewer and fewer are being located. It is felt that congenital syphilis is no longer one of our embarrassing problems.

TABLE II
Table of the Biloxi Survey Results

	Number	Per Cent
STS Taken	1237	100.
Negative	979	79.14
Positive and Doubtful	258	20.86
Proven Previous Adequate Treatment	223	18.03
New Cases Found	26	2.10
Old Cases Inadequate Treatment	4	.32
Positive Cases Not Treated for Medical or Other Reasons	5	.41

Comments. 1) There were 1237 blood tests made during the Biloxi Survey. This figure is approximately 66 per cent of the estimated Biloxi Negro population over 15 years of age³.

2) From the 358 positive and doubtful tests obtained through the survey, it was found that 223 of them represented persons with proven previous adequate treatment as based

on our criteria for adequate therapy previously defined. (Section 3, Survey Analysis). These were classified as cured or arrested and closed.

3) The 26 new cases located in the survey were the ones in which we were most inter-

3. See footnote 2.

ested. They were a potential source of many new contacts, and they were carefully questioned both locally and at the Treatment Center for these contacts.

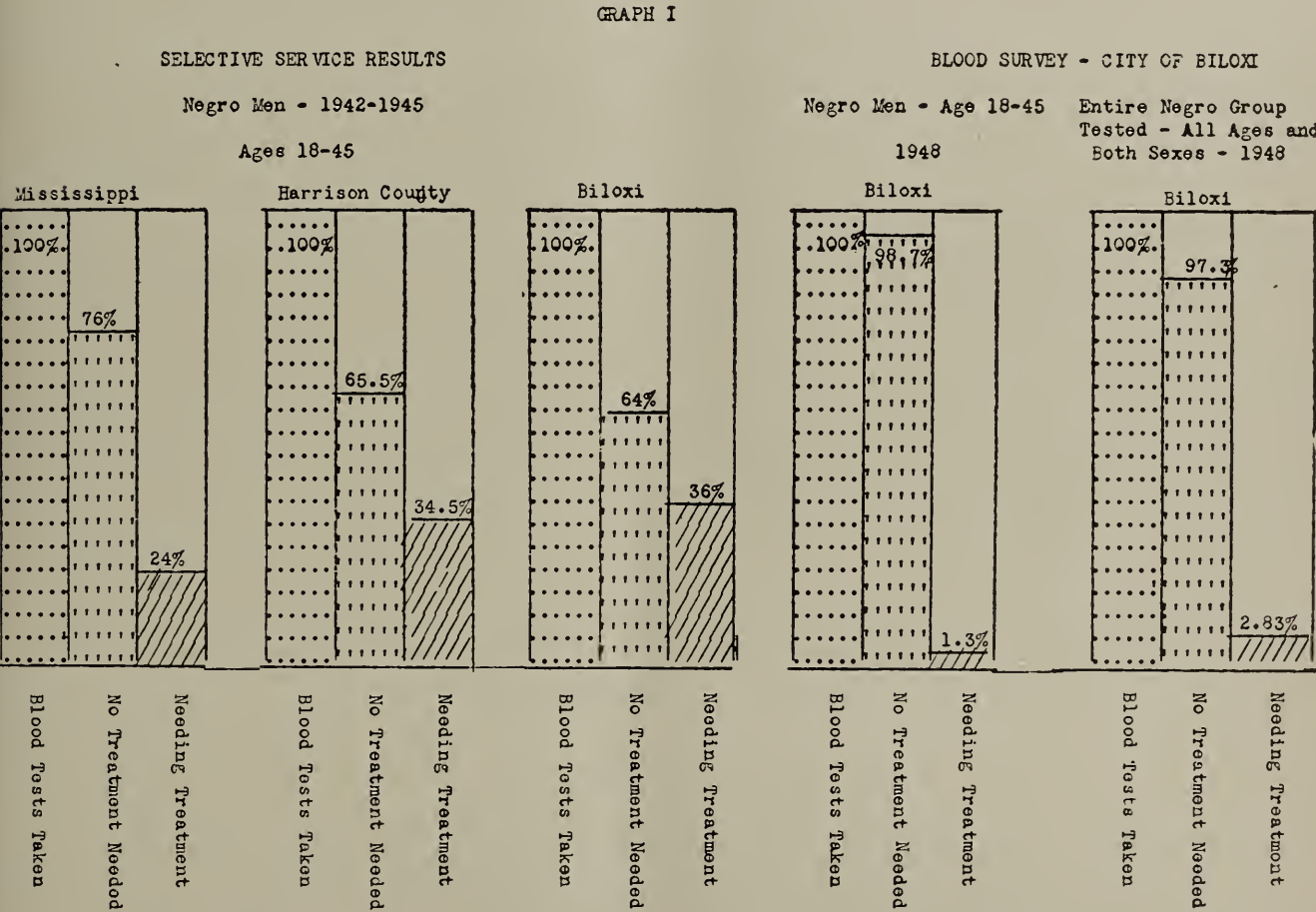
4) The fact that we were able to identify only four cases as needing additional medication speaks well for the past diligence with which treatment was administered as well as the zeal employed in case holding and the education of the Negro relative to this problem.

5) The five cases classified as positive cases but not treated presented a classical example of the ravages of late and complicated syphilis. After very careful medical study, it was felt that the ages and infirmities of this group

gave us a total of 35 or 2.83 per cent new cases found through the survey.

c. The following graphs are presented to show the comparison between the survey results and available Selective Service results for the state of Mississippi, Harrison County, and Biloxi area, it should be noted that for this comparison only the selective service age group of 18-45 years was used from the survey to make the graphs comparable:

Comments: 1) It should be noted that Harrison County had better than a 10 per cent higher incidence rate in the selective group than the state as a whole. Within the county, the city of Biloxi had an even higher rate of infection than the county as a whole.



made it unwise to subject them to a trip to the Rapid Treatment Center. These were referred to their private physicians for medical care.

6) In arriving at the total number of new cases found in the survey, we added together the new untreated infections found, the ones needing additional treatment or retreatment, and those positive cases classed as being in such deplorable condition that treatment by the Health Department was not indicated. This

2) Included in the Biloxi survey were 341 Negro males in the 18-45 age class, this group when compared to the three other selective service groups in the graph, shows a drop in incidence from 36 per cent in 1942—1945, to one per cent in 1948, a lower rate than the entire survey sample.

d. It then occurred to us that it would be interesting to evaluate the most recent routine program for the first eleven months of 1948 in the Biloxi area as compared to the survey.

TABLE III

Routine Program	First 11 months, 1949		Survey Results	
	Number	Per Cent	Number	Per Cent
STS Taken				
Negative	1132	100	1237	100
Positive and Doubtful	772	68.2	979	79.14
Proven Adequate Treatment	360	31.8	258	20.86
New Cases	321	28.36	223	18.03
Old Cases	33	2.91	26	2.1
Old Cases, Inadequate Treatment	5	.44	4	.32
Positive Cases, No Treatment	1	.09	5	.41

Comments: 1) First, we would like to point out that the two samples approximate each other in size and results.

2) There were about 100 more positive and doubtful tests obtained, with a like number of proven adequate treatments, in the routine program than in the survey. We feel that this indicates that we reached many new people in the survey, since the new cases found during the year in the routine program were all treated.

3) The number of cases classed as "Old Cases Inadequately Treated" was low in both the regular program and the survey.

4) This low percentage of new positives in the routine program could be interpreted as additional evidence of the low incidence of Negro syphilis in this area, particularly, when one considers that this work is for the most part directed at case contact investigation and tracing down of suspicious individuals.

Summary and Conclusions:

(1) The results of this survey show a drop from an infection rate of approximately 30 per cent in the Negro race of this area to a

prevalence of only 2.83 per cent of new cases since the inauguration of our control program. This figure approximates the white syphilis rate for the country and is the greatest reduction we have seen published.

(2) These results would seem to indicate that the control methods as outlined in this paper are an effective means of controlling syphilis in the Negro race and justify a continued effort along these same lines.

(3) The control efforts used in the past year can be used as a fairly accurate method to measure the effectiveness of the program rather than future surveys.

(4) Based on the past experience in this area as well as our experience during the survey, better results will be obtained by reducing our efforts to get the individual Negro under treatment and placing more emphasis on modern health education methods and less emphasis on police methods as has been done in the past. The modern concept of health education is the imparting of accurate health information to individuals and groups in such a way as to stimulate them actively to participate in finding and solving their own health problems voluntarily.

DOCTOR SEALE HARRIS

Dr. Seale Harris, en route by automobile last Saturday (October 1) to spend the week end with Dr. and Mrs. W. H. Anderson at Booneville, Mississippi, stopped at Haleyville, Alabama, for lunch. In some unexplainable manner Dr. Harris tripped at the hotel where he was having lunch and fell down a flight of stairs, very badly crushing his right elbow and suffering a slight pelvic fracture. After first aid at the local hospital he was brought to Birmingham by ambulance. His general physical condition is good, and he is doing as well as can be expected. Dr. Harris is at the Baptist Hospital, 2236 Highland Avenue, Birmingham 5, Alabama.

The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

On Sunday afternoon, Sept. 18, down at New-hebron Dr. S. E. Izard received his certificate and fifty-year pin for having practised medicine for a full half century. The meeting was held at the school house and Mr. Clyde Dampeer was chairman. Dr. W. H. Frizell of Brookhaven, president of the Fifty-Year Club, Dr. W. L. Little of Wesson, vice-president, and Dr. W. S. Waller of Silver Creek assisted in the program.

Mr. Smith, the superintendent of the schools, spoke of Dr. Izard as a citizen, recounting the valuable service he had rendered through the years. A large audience was present to do honor to this beloved citizen. All the doctors present had words of praise for Dr. Izard. He is a true soldier of service in the great medical profession. He has been a patriot on duty holding the thin lines in medical service in the small town and rural community. Dr. Izard

believes that greatness is measured in service to one's fellow man. It was an honor and a pleasure to be at this meeting.

Make your best effort to attend the Delta Medical Society at Sunflower on October 12. It will be good to be there and embide anew the great Delta spirit—yes spirit, we did not say spirits.

The Southern Medical Association will soon be coming up. It meets in Cincinnati this fall. It is one of our best. Make your plans to attend.

The state division of the American College of Surgeons held a splendid meeting recently at the Heidelberg Hotel in Jackson. Dr. V. B. Philpot presided over the meeting. The program was fine and we hope to publish some of these papers.

The American College of Physicians will hold a meeting in our state in the not too distant future. Make your plans to attend if you can.

The various divisions of the Cancer Committee of the State Medical Association have held a number of meetings recently. The last to meet were the ones on finances and terminal cases. The finance committee is doing its best to meet the financial needs of the campaign against cancer. The committee on terminal needs is headed by Dr. E. R. Nobles of Rosedale and he had one hundred per cent of his committee present. This committee is trying to determine the best way to handle the case that is incurable and has no money. A number of questions have arisen. Shall the patient be kept at home and be made comfortable as can be under the circumstances, or shall he be put in the local hospital, or shall there be a central hospital to take care of the incurables located at Jackson? The committee is in earnest search of the answer to these questions.

STATE HOSPITAL ASSOCIATION

Our State Hospital Association meets on the Coast, October 20 and 21. This association should be well attended by hospital administrators, owners, managers, doctors and nurses. Our state is taking the lead in a great hospital program and the medical and related

professions should assume constructive leadership in the utilization of these important stakes put up by public funds. Our nation is utilizing more medical service than any other nation on the earth and it has proved to be good human economy.

The era of privately owned schools passed largely many years ago; the privately owned hospital is now beginning to give way to the public institution. But the public institution needs the personal touch, the financial ingenuity, the fine human relations, the invigorating atmosphere, and the all-over flexibility of the private hospital. These assets and many others must be transferred to the public institution with its open staff and bigger plans for more complete medical coverage to the people.

Our state is launching out on a great hospital system, which should mean better medical service to more people, but it will take cooperation and understanding on the part of the people, the hospital and the doctors, ever keeping in mind the sick patient as the first consideration if we are to reap the medical benefits that public funds have a right to expect. If the atmosphere in the larger public institution is to be cold and impersonal, finances will be all the harder. The expense of the new institution must be given most serious consideration from the beginning, purposing to give more and better medical coverage to the people and better opportunities to every doctor who is qualified to render medical service. Hospital economy must be studied; simply raising prices to meet the bill will not answer all the problems.

Good health is in better personal incomes of the people. The per capita fund for the indigent sick in which the small hospitals share, will need to be increased to meet high prices and better service. Insurance must come in for major consideration. The people are looking for insurance that will give the sick coverage everything included. The Blue Cross has done a fine job and will continue to do so. Private insurance companies are offering good policies aiming at complete coverage of the sick. The man who takes insurance against illness not only helps himself but he helps others as well. Our state is showing the way in hospital construction and our state hospital association should be a great factor in showing the way to the successful management of same. Hospital vision with Golden Rule application of medical service to the people should be the order in the new era.

News and Comment

LIBRARIANS TO MEET

The annual meeting of the Mississippi State Association of Medical Record Librarians will be held at Hotel Euna Vista, Biloxi, on October 19, the day preceding the opening of the State Hospital meeting. The guest speaker is to be Miss Baumann, RRL, of Indianapolis, Indiana, president of the American Association of Medical Record Librarians. A complete and interesting program has been planned, and doctors and hospital administrators, as well as record librarians are urged to attend this meeting.

EXECUTIVE MEETING

Dr. B. B. O'Mara, of Biloxi, president of the Mississippi State Medical Association, Sunday asked that vigorous support be given the educational campaign against the proposed compulsory health insurance program. Dr. O'Mara spoke before a meeting in Jackson of officers of the Woman's Auxiliary to the Mississippi State Medical Association with the advisory council of doctors.

Dr. B. S. Guyton, of Oxford, President-elect of the Mississippi State Medical Association, urged that the Auxiliary assist in educating the public to the need of a four year medical school in Jackson. He delivered a well-informed address on reasons for the establishment of such an institution.

Mrs. Augustus Street, Vicksburg, President of the Woman's Auxiliary to the State Medical Association, presided over the meeting and called for advisory remarks from Dr. Stanley Hill, Corinth, and Dr. Lawrence Long, Jackson.

Those attending the meeting were: Mrs. Augustus Street, Vicksburg; Dr. B. B. O'Mara, Biloxi; Mrs. Lawrence J. Clark, Vicksburg; Dr. B. S. Guyton, Oxford; Dr. and Mrs. Stanley Hill, Corinth; Dr. Lawrence Long, Jackson; Mrs. Harvey F. Garrison, Jackson; Mrs. P. E. Smith, Hattiesburg; Mrs. W. L. Waldron, Mrs. T. A. Baines, Jackson; Mrs. W. H. Anderson, Booneville; Mrs. J. K. Avent, Grenada; and Mrs. Jno. B. Howell, Jr., Canton.

STATEMENT OF DR. R. B. ROBINS, DEMOCRATIC NATIONAL COMMITTEEMAN FOR ARKANSAS, TO THE DEMOCRATIC NATIONAL COMMITTEE AUGUST 24, 1949

I desire to bring to the attention of the Committee at this time a dangerous threat to

the strength and unity of the Democratic party.

I refer to the misuse of the good offices of this Committee in support of agitation for Compulsory Health Insurance. Such agitation, emanating from offices as high as that of our Chairman, threaten to "read out" of the Democratic Party many hundreds of thousands of persons who are now on record as opposing Government control of medicine.

I submit that this agitation by members of the Committee is reckless and unauthorized. The Democratic Party is not on record in its party platform as favoring Compulsory Health Insurance. At the Philadelphia convention last year, the Democratic party announces support of a national health program for expanded medical research, medical education and hospital and clinic facilities. This does not constitute endorsement or recommendation of Compulsory Health Insurance.

The Compulsory Health Insurance issue is a bad penny that turns up every few years. It has never obtained sufficient support to merit incorporation in the platforms of either of the major political parties. It has never obtained sufficient support to be legislated in Congress. The reason for this weakness is apparent. In every large nation where government medicine has been attempted, there has been a decline in the quality and quantity of medical services and an increase in their cost. Only borrowed American dollars prevent its utter disintegration in these same countries today.

Admittedly, some way must be found to take the financial shock out of illness. Voluntary Health Plans are one answer. The proof of this is in the rapid growth of these plans. More than 60 million Americans are now insured against the expense of major illness through these plans. They are not yet perfect, but they are being improved all the time, both as to range of coverage and benefits.

The time has come to ask ourselves some very serious questions.

Ladies and gentlemen, do we want to serve notice on the five million members of the General Federation of Women's Clubs that they are not wanted by this party because they have gone on record against socialized medicine?

Can we afford to tell members of such organizations as the American Farm Bureau Federation, the National Grange, and the American Legion that there is no place for them in the Democratic party because they oppose Compulsory Health Insurance?

Are the loyal Americans who constitute almost the total membership of the Chambers of Commerce in this country unwelcome because they too have gone on record against Compulsory Health Insurance?

I could continue almost indefinitely reading the roster of some of the finest, most patriotic, non-political organizations in the United States which are on record against socialized medicine. There is hardly one of these groups whose support would not be a credit and comfort to our party in the coming elections.

The opposition to Compulsory Health Insurance transcends every geographical, economic and political boundary in this country. This is well proved by the roll call of the Senate last week against a Reorganization Plan which would have placed Oscar Ewing in a Cabinet post.

Ladies and gentlemen, this was a vote against socialized medicine. It was also a vote of no confidence in socialized medicine's leading exponent, Oscar Ewing. This is obvious when you realize that twenty-three of our Democratic senators joined that vote despite a personal plea from the President to support the Reorganization Plan. Other Reorganization plans having nothing to do with Mr. Ewing were passed by the Senate and favored by many Republicans.

I will grant you that we have had division and secession in our party before. We have had our splinter parties. However, it would be a grave mistake to underestimate the division that is shaping up today in our ranks—a division not of regional or economic interests, but one of **socialism versus Americanism**. The plain fact is that we are now in grave danger of making an error which may cost us our leadership in national government. Compulsory Health Insurance is repugnant to the ideals and convictions of the American people. We have long prided ourselves in our ability to hear the voice of the people. If we do not hear it now, we may never have an opportunity to respond to it in the future.

ANNOUNCEMENTS

Gilbert F. Douglas, M.D., gynecology and obstetrics, and Gilbert F. Douglas, Jr., M.D., diagnostic and internal medicine, announce transfer of offices to 1912 South Fourteenth Avenue, Birmingham, Alabama.

The Street Clinic, Vicksburg, Mississippi, announces the association of Dr. Henry N. Westhafer, in charge of the Department of Anaesthesiology.

The Seale Harris Clinic announces the addition of departments of cardiology and general surgery, Seale Harris, M.D., director. The staff includes James F. Crenshaw, M.D., co-director, W. Marvin Woodall, Jr., M.D., diabetes, endocrinology; Claude C. Blackwell, M.D., general surgery; James C. Crabtree, Jr., M.D., internal medicine; and Addison L. Messer, M.D., cardiology, 2219 Highland Avenue, Birmingham, Ala.

INTERNATIONAL COLLEGE OF SURGEONS

The International College of Surgeons, United States Chapter, will hold its fourteenth annual assembly and convocation in Atlantic City, New Jersey, November 7, 8, 9, 10, 11, 12, 1949.

WHEN WILL THE BABY BE BORN?

W. R. HUNT, M.D.
Tupelo, Miss.

I HAVE read that obstetricians have agreed that the duration of normal pregnancy is about forty weeks. But, according to ancient history the week as calculated by man, contained about seven and three-eighths days, according to movement of certain planets, but I do not think that the movements of planets have anything to do with the length of pregnancy in a woman.

I think that the Creator made the natures of all human normal beings exactly alike except the differences between male and female but these conditions have been greatly changed by humanity and other circumstances.

In my experience, beginning just before I was forty-six years old, I have attended the births of 1796 babies, that were far enough along to have birth certificates made out for them, and this has caused me to believe that the first question to ask is, "When did the spermatozoon and ovum unite?" How long

DEATH

DR. W. H. Cleveland

Death September 9 claimed one of north Mississippi's best known public figures.

Dr. W. H. Cleveland, 60-year-old director of Lee-Itawamba Counties Health Department for the past 19 years, died at Community Hospital in Tupelo following a heart attack which occurred one week before, when he was rushed to the hospital. Hope was held until just before the second block occurred Friday night.

Born in Itawamba County July 28, 1889. Dr. Cleveland attended the University of Tennessee Medical School at Memphis and took postgraduate work at Tulane University, later adding a public health course at Johns Hopkins University.

He began practicing medicine at Mantachie, in his native Itawamba County, 25 years ago and entered public health service four years later. He came to Tupelo in 1930 and assumed charge of the Lee County Health Department in Tupelo, the post he held at the time of his death.

Services were held Sunday afternoon at the Tupelo First Baptist Church.

In addition to his wife, Dr. Cleveland leaves three daughters, Mrs. J. V. Deeg and Mrs. Willa Collins, both of Memphis, and Mrs. Adrian Bancker of Biloxi; three brothers, A. T. Cleveland of Fulton and Webster and Dan Cleveland, both of Belmont, and two sisters, Mrs. V. B. Hill of Wiggins, Miss., and Mrs. Fred Johnson of Osceola, Ark.

can these stay in birth tract before they either unite or die? Is the spermatozoon that is responsible for this pregnancy introduced before or after the last menses? How greatly displaced are the different parts of the path that is traveled by these two units before they come together? Is this pathway diseased or distorted in any way? Does the rotation of the moon or any other planet have anything to do with a woman's pregnancy?

My experience and what little reasoning that I have lead me to believe that the Creator made man and woman in a perfect condition physically, and if they had stayed in that condition, I believe that the length of time of her pregnancy could always be calculated without reference to the movements of any satellite or planet.

I believe that 273 days is as nearly correct for the length of a woman's normal pregnancy as we can count upon.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson

Otolaryngology—Charles R. Hume

Ophthalmology—Edley Jones, Vicksburg

Obstetrics and Gynecology—J. F. Lucas, Greenwood.

Orthopedics—Thomas H. Blake, Jackson.

Public Health—Felix J. Underwood, Jackson.

Pediatrics—Harvey F. Garrison, Jackson.

Radiology and Roentgenology—Karl O. Stingily, Meridian.

Pathology—R. M. Moore, Vicksburg, Miss

Surgery—W. H. Parsons, Vicksburg.

Urology—Temple Ainsworth, Jackson.

PEDIATRICS

How Long Does Immunity to Diphtheria Last? Eli Eichelberger, Department of Health, York, Pa., *Am. J. Pub. Health* 38:1234-38, September 1948.

"A review of the morbidity reports from the health departments of Pennsylvania, New York, Massachusetts and California for a two year period reveals that no age group is immune to diphtheria. A Schick testing program was conducted in three junior high schools and

a large senior high school in York, Pa. Of previously immunized pupils it was found that 20 per cent of 1,250 pupils in junior high schools and 18 per cent of 1,119 pupils in senior high school had a positive Schick test. In this group, an interval of five to twelve years had elapsed since the original diphtheria immunization, depending upon the age and the grade of the individual tested. Booster doses of 0.5 ml. of alum-precipitated diphtheria toxoid were given to the 449 pupils found positive. It is concluded that diphtheria immunity is often not lifelong and that approximately 20 per cent of individuals immunized as children will require a booster dose of toxoid to protect them adequately as adults."

Comment: It is the practice of practically all recognized pediatricians to give the combined whooping cough, diphtheria and tetanus toxoid in 3 doses, $\frac{1}{2}$ cc. the first dose and 1 cc. each month for 2 months, and then give what we call a booster of 1 cc. of the same each year thereafter. In this way, it is generally felt that the immunity can be kept up to a high level for whooping cough, diphtheria and tetanus.

MISSISSIPPI ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

The Mississippi Association of Obstetricians and Gynecologists will be held at the Robert E. Lee Hotel Japanese Room on October 27. Dr. Willis E. Brown of the Arkansas Medical school will be the guest speaker. Dr. Brown's subject will be "The Management of Eclampsia." Don't miss this meeting.

State Board of Health

Felix J. Underwood, M.D.

OSLER'S CONTRIBUTIONS TO PUBLIC HEALTH

by Louise Williams
Librarian

It seems fitting upon the hundredth anniversary of the birth of Sir William Osler to pay tribute to his memory in a section usually devoted to public health accomplishments. Many of these accomplishments were unquestionably brought to fruition as a result of the foundations laid by this masterful teacher and preventive-minded physician. "No longer is our highest aim to cure, but to prevent disease," he told the Ontario Medical Association in 1909, and one only has to take an excursion into the field of his numerous writings to discover that his ideals and teachings were backed by works.

An assignment to locate a particular statement he once made about syphilis being "the great imitator" led to a rather extensive search which proved a revealing experience to the librarian and at the same time a refreshing one. His broad interests, his superbly beautiful prose, his sense of humor, and his wonderful insight into the problems of his day combine to make him and his literary contributions a fitting study for our times. No physician could fail to find it both profitable and inspiring to observe his anniversary year by reviewing as many of his articles and books as they may have access to.

Osler began practice in an era in which few of the great scourges of disease which periodically depopulated many sections of the world had been brought under control. His famous **Principles and Practice of Medicine**, first published in 1892 is noted for its excellent descriptions of the various infectious diseases. It was "the Book" of its day and its influence upon medical practice must have been great indeed. It was translated into French, German, Spanish and Chinese, and Dr. Maude Abbott¹ points out that "the outstanding chapters are those on the communicable diseases (in par-

ticular typhoid and malarial infections, cholera Asiatica, the pneumonias, syphilis and tuberculosis) . . ."

His earliest writings of public health significance were devoted to a consideration of animal parasites and the relations of animals to man (1876), and to respiratory infections (miner's lung," 1875). Later came articles on typhoid, smallpox, diphtheria, cholera, yellow fever, syphilis, tuberculosis, etc., in rapid succession. In May, 1917, he delivered his Fothergillian Oration before the Medical Society of London, using as his subject, **The Campaign Against Syphilis**². Of this address, Dr. Harvey Cushing³ states "he spoke openly and effectively about the most formidable enemy of the race . . . Nothing better, more appealing, more sympathetic, more hopeful could have been written on the subject." Great movements usually have their start in small beginnings and Osler contributed immeasurably to many of these beginnings which led still another generation into avenues which culminated in their success.

The world needs more such men as Osler with his fine sense of direction, his critical evaluation of diagnostic and therapeutic procedures, his concern for the patient rather than of his disease, and his warm responsiveness to the needs of humanity in general.

In his splendid biography of Osler, Harvey Cushing³ states: "One cannot escape the feeling that Osler's greatest professional service was that of a propagandist of public health measures" and one only has to study his writings and to read this excellent record of his life by one who knew him best to discover the truth of this assertion.

Dr. William H. Welch, himself a great public health pioneer and associated with Osler at Johns Hopkins calls him "a great physician and medical humanist." In his review⁴ of Dr. Cushing's **Life of Osler**, he says: "Here one can follow Osler's important share in the great reforms of hospital organization and medical education . . . his inspiring methods of clinical

teaching, his inimitable ways with patients, his intimate relations with staff and students . . . his helpful participation in the life of the community and of the local profession, his championship of the cause of public health, his stirring addresses and many other activities—all told with a wealth of detail and of anecdote which make the real Osler live again . . . Throughout the story the author dwells with merited enthusiasm upon Osler's services in the anti-tuberculosis and other public health movements, and considers justifiably that his vigorous early participation in the world-wide campaign against tuberculosis stands in the forefront of the many public services he rendered."

With all his activities and interests, he found much time to spend with books and libraries and one can only speculate as to how much influence they may have had on his vastly useful career. One does know that he had a tremendous influence upon the development of medical libraries and that he was a great friend and benefactor to many of them. While few men are endowed with such diversity of talent, or can ever hope to achieve such stature, they can do much toward enriching their own lives and those about them by studying his writings and striving to profit by the lessons he taught and the many fine examples he set.

1. Abbott, Maude E.—Classified and annotated bibliography of Sir Wm. Osler's publications. 2d ed., Montreal. The Medical Museum, McGill University. 1939.
2. Osler, Wm.—The campaign against syphilis *Lancet* (London), May 26, 1917.
3. Cushing, Harvey—The Life of Sir William Osler. (Oxford, Clarendon press, 1926).

4. Welch, Wm. H.—A great physician and medical humanist; a review of Harvey Cushing's Life of Sir William Osler. *The Saturday Rev. of Literature*, November, 1925.

* * *

Recent Additions to the Library

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"If people of this nation are to recognize clearly and in time the grave issue involved in the proposal for a Government-controlled medical system—all who know the facts have an obligation to speak out—for the matter seriously concerns the health and the welfare of every American!"

MRS. DAVID B. ALLMAN, President,
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AUXILIARIES ENTER FALL WITH NEW ENTHUSIASM

September ushered in a number of auxiliary meetings, graced by a new willingness to take over the task of becoming informed and then

to unify efforts in this year of opportunity to serve.

The first meeting of the month was held in Hattiesburg, the Auxiliary to the South Mississippi Medical Society meeting with the doctors for a superbly served buffet dinner at the country club. The ladies went to the hospitable home of Mrs. Richard Clark for their meeting. Presided over by Mrs. Eugene Busby, the president, the group enjoyed hearing messages from the state president, Mrs. Augustus Street of Vicksburg, and the president-elect, Mrs. W. H. Anderson of Booneville. Emphasis was given to ways of promoting voluntary health insurance plans as a means of dissuading the people from approving a compulsory health program.

* * *

The members of the advisory board, Dr. B. B. O'Mara of Biloxi, Dr. B. S. Guyton of Oxford, Dr. Lawrence W. Long of Jackson, Dr. Stanley Hill of Corinth, met with the executive organizational and legislative committees of the executive board on September 11 at the Heidelberg Hotel, for the purpose of formulating plans. Mrs. Gus Street presided at the round-table meeting, which concluded with a luncheon.

* * *

On September 13 the quarterly meeting of the Auxiliary to the Northeast Mississippi Society met in Aberdeen at the spacious Southern colonial home of Mrs. C. C. Brummett for the afternoon program, Mrs. James Green of Tupelo, president, presiding. Mrs. John F. McDougal, state supervisor of the Crippled Children's Bureau, was the guest speaker, presenting the work and needs of the organization. During a delightful social hour Mrs. A. A. Roebuck, accompanied by Miss Johnson at the piano, gave several vocal selections. Mrs. R. T. Dabbs then poured tea, assisted by doctors' wives of Aberdeen in serving the dainty collation.

* * *

The Washington County Auxiliary, one of the strongest and most active in the state, met September 16 at the Greenville Hotel in Greenville for luncheon at twelve-thirty, followed by the regular meeting. Mrs. George F. Archer, president, presided, enthusiastically outlining plans for the auxiliary in the coming year. She presented Mrs. Augustus Street, state president, Mrs. L. J. Clark of Vicksburg,

legislation chairman, and Mrs. J. K. Avent of Grenada, immediate past-president, in an excellent review of the work challenging the doctors' wives over the state this year.

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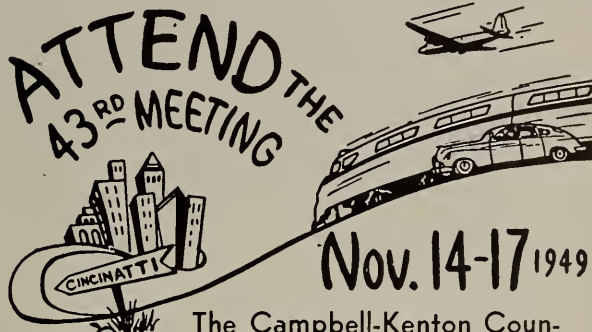
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THE SOUTHERN MEDICAL ASSOCIATION was founded in 1906 for the purpose of developing and fostering scientific medicine and surgery in the South and in its forty-three years of existence has never deviated from this objective. Through attending the annual meetings of the Southern Medical Association and by reading The Southern Medical Journal, thousands of physicians of the South are taking an important step toward achieving and maintaining their competence in the constantly changing field of medicine.

REGARDLESS of what any physician may be interested in, regardless of how general or how limited his interest, there is always a program at the meeting and articles in the Journal to challenge that interest.

THE MEETING this year will be composed of thirty-two sessions of the twenty-one sections, two General Clinical Sessions and two conjoint meetings. Eligible members of state and county medical societies in the South should be and can be members of the Southern Medical Association. The annual dues of \$5.00 include the Southern Medical Journal, a journal that should be a "must" on every physician's reading list.

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Some Observations on the Care of the Premature Infant*

(Abstract)

HEYWORTH N. SANFORD, M.D.

Chicago, Ill.

IN 1936 there were 2,363 premature infants born in Chicago, with a premature mortality of 25.6 per cent. In 1947 there were 5,696 premature infant births with a mortality of 19.0 per cent. In this ten-year period the premature birth rate has about doubled, rising from 4.9 per cent to 7.5 per cent while the mortality rate has decreased about one sixth.

A great deal of this decreased mortality has been accomplished by the activity of the Chicago Health Department in conducting a drive to reduce premature mortality during this period. Premature infants born in the home, or in a hospital that is not equipped with facilities for the care of prematures, are immediately transported in heated oxygenated incubators by the Chicago Health Department to one of the three hospitals in the Chicago area giving premature care.

In the Presbyterian Hospital of Chicago all of the premature infants are given breast milk obtained from our pool of maternity patients, or from the breast milk station conducted by the Chicago Health Department. All of the infants are fed at four-hour intervals by gavage until they reach a weight of five pounds. Water is offered by nipple between feedings, and rarely are additional subcutaneous fluids necessary. Blood transfusions are given frequently if anemia develops, or the weight gain is unsatisfactory. All of the infants are kept in an atmosphere of oxygen for at least forty-eight hours, or until all periods of cyanosis have ceased.

As to accessory foods water soluble vitamins A and D are begun at the end of the second week of life, as is vitamin C. These vitamins are absolutely necessary, but we have not observed that any others are. Vitamin K is not given as our studies have shown that while

it will increase the prothrombin content of the blood, it has no clinical effect on the incidence of hemorrhagic disturbances, or cerebral hemorrhage. Actually hemorrhagic disturbances are not as common in the premature infant as we have been led to believe. Estrogen therapy is under study at the present time, but as yet has not shown any definite benefit. Iron is given only if anemia develops during the premature period.

The control of infections is most important. Personnel caring for the premature infant should do nothing else, nor have any other contact with other infants. Sterile technic should be used at all times, and the baby handled little as possible. No physician or interns should enter the premature nursery except those in direct control. It is best to have the premature infants under the direction and control of one pediatrician. If infections do develop the premature infant takes chemotherapy very well. Sulfadiazine may be given by mouth 1 to 2 gr. per pound over a twenty-four-hour period, or penicillin 10,000 to 20,000 units subcutaneously every four hours. For gastro-intestinal infections streptomycin is of great value and may be given in amounts of about 0.1 gm. per K. in twenty-four hours.

Congenital defects are responsible for many of the deaths occurring in premature infants. One should be very certain that prematures with excess salivation do not have a tracheoesophageal fistula, and that all vomiters do not have intestinal atresia. Early diagnosis and operation offers some hope for these infants. Many instances of atelectasis confined to one or two lobes may be aspirated by bronchoscopy. Our practice is to obtain roentgenograms of the chest of all premature infants immediately after birth, and all showing this condition are bronchoscoped.

The Technique of Longitudinal Pin Fixation of Fractures of the Forearm*

ARTICLE III

LESLIE V. RUSH, M.D.*

and

H. LOWRY RUSH, M.D.*

IN A recent article,¹ Stuck and Thompson have reviewed the development of intramedullary fixation of fractures of the forearm by the use of Kirschner wires and Steinmann pins. They point out the many advantages of the method over those previously employed in these fractures, stating, "Use of removable intramedullary wires and pins seems to offer a happier solution to these problems than anything that has been tried thus far," despite the necessity for plaster casts to control rotation of the fragments and the necessity for plaster casts to control rotation of the fragments and the necessity of permitting the wires or pins to emit from the skin to allow for later removal, and prevent migration into the bone.

The development of the longitudinal pin,² we believe, eliminates these disagreeable features. In our experience casts and splints are rarely needed; the head of the pin can be completely buried within the tissues within minimal risk of migration into the bone; rotation can be accurately controlled in most instances; and the pins can be removed when their purpose has been served. The rigidity of the pins preserves the interosseous space and by permitting early function, the muscle tone of the forearm is maintained, providing constant compression to the fractured ends despite absorption that might occur. Not only has union



Figure 1A: Antero-posterior and lateral view non-union both bones of forearm treated by open reduction elsewhere five months previously. Cast had been worn five months with muscle atrophy and loss of function.

* From Department of Surgery, Rush Memorial Hospital, Meridian, Mississippi.

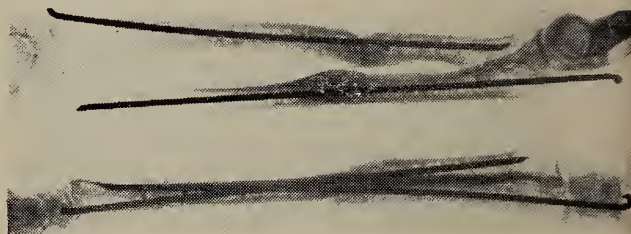


Figure 1B: Four months after pinning. Bone ends of radius freshened, ulna not disturbed, immediate muscle function insisted upon. Signs of clinical union apparent within eight weeks.

been secured more satisfactorily by this method than by any others used by us, but in several instances, good union has been secured in cases of non-union and delayed union by the application of this method alone without bone graft. (Figure 1.) In one instance, a good union was secured in the bridging of a three-inch defect in the ulna when a fibula transplant was used as a bridge which was trans-fixed by the longitudinal pin with circular wires, using no external immobilization of any kind, and permitting full function in two weeks. (Figure 2.)



Figure 2A: Old compound fracture of ulna with loss of bone substance and extensive scarring of soft tissue.

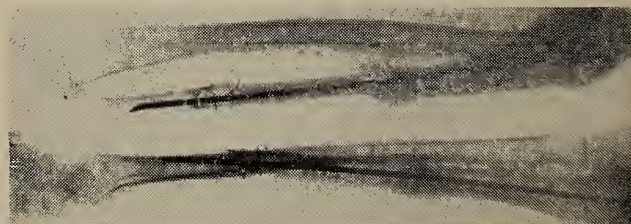


Figure 2B: Three months after bridging bone defect with fibula graft using longitudinal pin and circular wire for fixation. Splints worn two weeks, full function encouraged thereafter.

Monteggia Fracture

Our original paper in 1937³ dealt with the Monteggia fracture. This injury is due to direct violence which frequently occurs when the flexed elbow is protruding through an automobile window striking some extraneous object. The force of the blow fractures the upper third of the ulna and drives the proximal end of the radius anteriorly, often rupturing the orbicular ligament. The pull of the triceps tendon angulates the upper fragment posteriorly and the fragmented shaft of the ulna usually is displaced anteriorly. These fractures are frequently compound, and there may be severe comminution of a large portion of the upper third of the shaft of the ulna. In the original publication, it was pointed out that reconstruction could be satisfactorily accomplished by introducing a Steinmann pin through the olecranon, driving it axially into the medullary canal of the distal shaft of the ulna, fixing the comminuted fragments about the pin in the intervening gap using encircling stainless steel wires. This usually results in reduction and maintenance of the dislocated radial head. The technique can now be improved with the longitudinal pin which is utilized in the same way with the exception that the hooked head can be buried beneath the soft tissues until such time as its removal is considered necessary. External immobilization is, as a rule, considered wise until the soft tissues have healed, at which time active motion of the member can be begun.

Olecranon Fracture

This fracture usually occurs transversely immediately beneath the articular end of the humerus and may be the result of muscular pull or direct violence. The triceps muscle acts unopposed upon the olecranon and separates the fracture widely. In fixing this fracture with a longitudinal pin, supplemental wires should be used because the upward pull of the triceps muscle eventually results in distraction of the ulnar fragments, and we have seen two instances of fibrous union, the result of this separation.

Colles' Fracture

In a recent article,⁴ the application of this principle to the treatment of Colles' fractures has been dealt with. In this article it is pointed out that a longitudinal pin could be introduced axially into the shaft of the radius

without difficulty through a drill hole in the styloid end of the radius, pushing the pin upward through the cancellous bone until the sled-runner point strikes the far cortex, and then, as it is tapped with a mallet, the pin will find its way up the medullary canal of the shaft. In treating fractures of the shaft, the pin is introduced in this manner, but before applying the pin to the fractured radius, the characteristics of the fractures of the shaft of the radius and the ulna should first be reviewed.

Fractures of the Shafts of the Radius and Ulna

CHARACTERISTICS: Four fragments may have to be dealt with and in addition, it must be remembered that the forearm controls the hand, providing it with the function of pronation. The ulna is a fixed bone and plays no part in this function, rather the function is performed by the radius which slides medially and laterally over the surface of the ulna to perform this function. It is important to bear these factors in mind and in considering the mechanics of displacement and of reduction in fractures of the forearm. The pronator radii teres muscle is inserted into the shaft of the radius slightly above the middle portion and

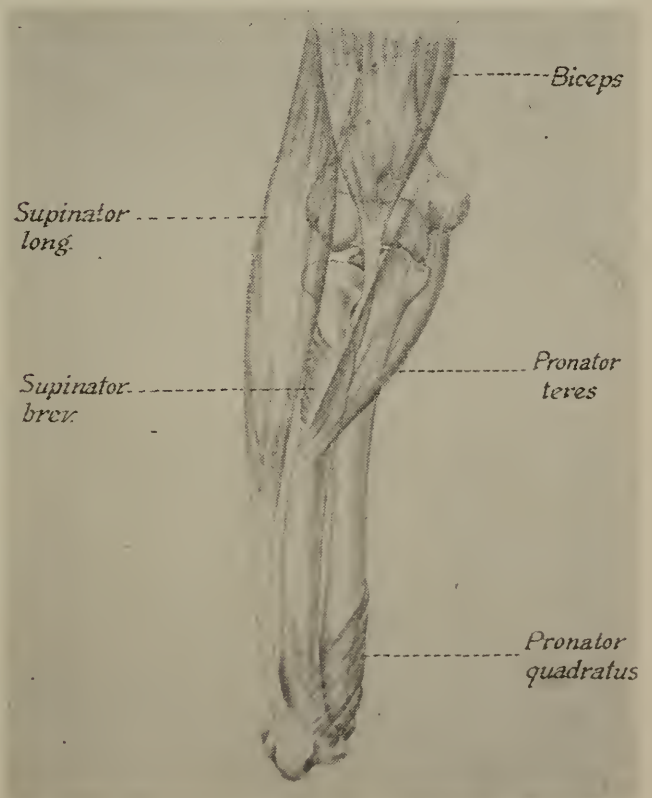


Figure 3A: Drawing important muscles forearm which influence displacement of fractured fragments.

exerts a marked influence upon the displacement of the radius dependent upon whether the fracture occurs above or below the insertion of this muscle. (Figure 3A.)

FRACTURE UPPER THIRD OF RADIUS ALONE: This is a portion of the bone which lies between the bicipital tuberosity, into which is inserted the tendon of the biceps muscle, and the point of insertion of the pronator radii teres muscle which is at a point slightly above the middle portion of the radial shaft. (Figure 3B.) Both of the pronator muscles of the

tion, and the pin should be driven into the upper fragment when the forearm is in supination.

FRACTURE OF THE RADIUS: LOWER TWO-THIRDS: In fractures of this portion of the radius, the supinator and the pronator muscles very nearly balance each other and the upper fragment is flexed slightly by the action of the biceps muscle and the flexor action of the pronator teres and remain in the neutral position in regard to supination and pronation. (Figure 3C.) Consequently, these

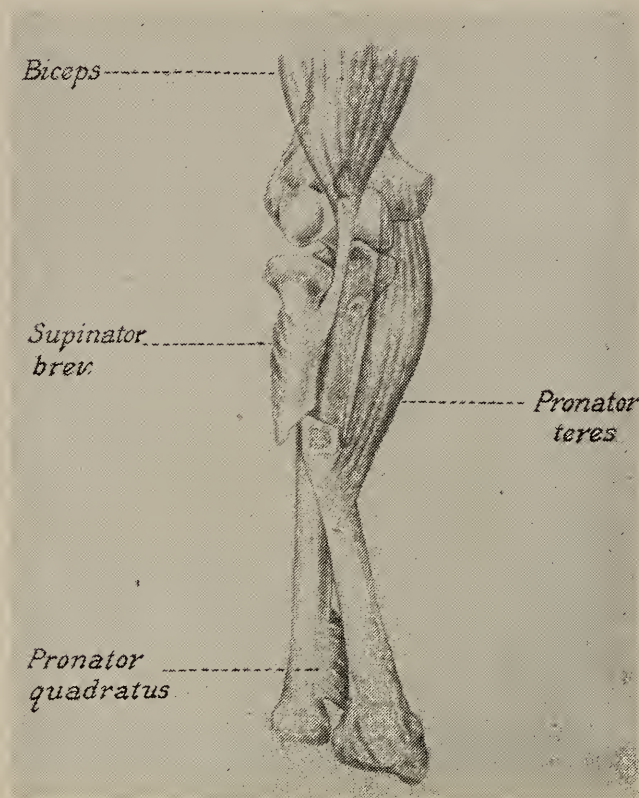


Figure 3B: Showing muscle displacement, fractures of the upper third of radius above insertion of pronator teres. The upper fragment is supinated. The lower fragment pronated.

forearm are attached to the lower fragment (pronator teres and pronator quadratus). The strong supinators (biceps and supinator brevis) are attached to the upper fragment. Consequently, the upper fragment is supinated while the lower fragment is pronated. In addition, the biceps tends to flex the upper fragment. As a result, the fractures of this portion of the bone must be treated with the forearm in full supination, when external immobilization is used because we have no control of the upper fragment, but do have control of the lower fragment at the wrist. Consequently, when the longitudinal pin is used, the same factors must be taken into considera-

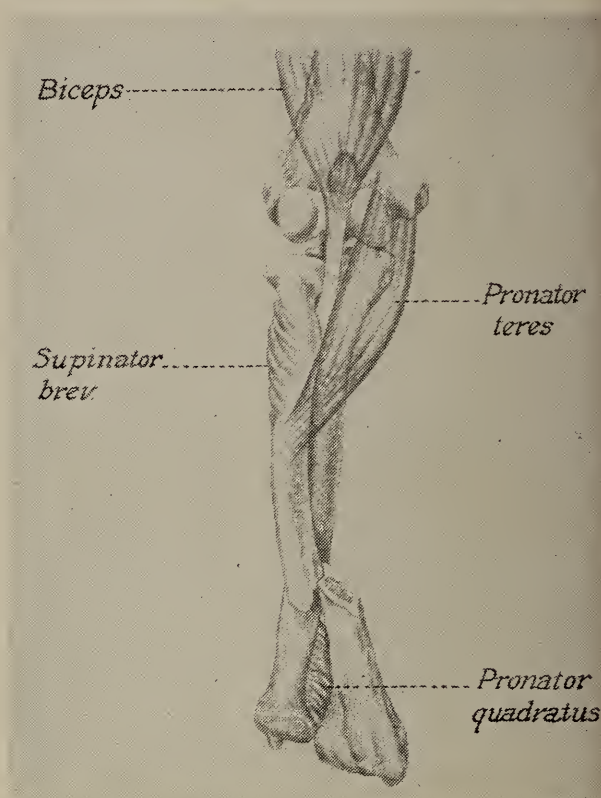


Figure 3C: Lower two-thirds of radius. The upper fragment is in the neutral position because of balance of muscle pull on upper fragments.

fractures should be pinned with the radius in the neutral position.

FRACTURES OF BOTH BONES: In addition to the characteristic displacement of each bone as just described, when both are fractured simultaneously, there is a tendency toward overlapping. The lower fragments also tend to approach each other because of the transverse pull of the pronator quadratus muscle which is a quadrilateral band of muscle tissue attached to both bones just above the wrist. (Figure 4.) In addition to this, the radius is further pulled toward the ulna by the supinator longus, the abductors, and extensors of the thumb.

Pinning

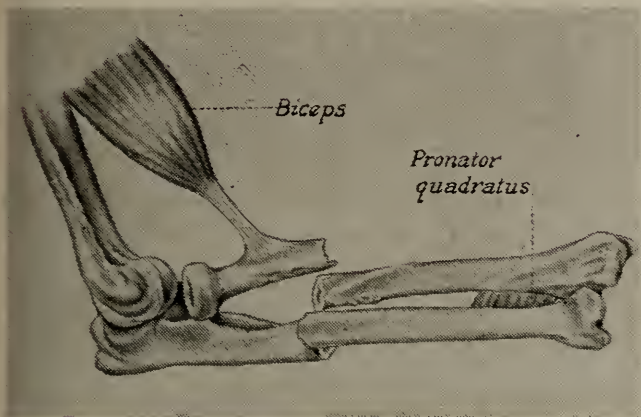


Figure 4A: Drawing showing characteristic deformity fracture both bones. Loss of interosseous space between fragments.



Figure 4B: Drawing showing how double pin fixation resists this muscle pull, preserving the interosseous space.

TO SUMMARIZE: When both bones are broken, there is a natural tendency for the bones to overlap which is not true when a single bone is fractured. The ulna is not directly acted upon by muscle except that the pronator quadratus in the lower third of the forearm tends to pull the two bones together. When the fracture involves the upper third of the radius, the proximal fragment is slightly flexed and fully supinated; the distal end of the radius is pronated. When the fracture involves the lower two-thirds of the radius, the upper fragment is slightly flexed in the neutral position, as regards supination and pronation, and the lower fragment is pronated. Roughly then, we must bear in mind that the muscle pull and its effects upon the displacement is exerted almost exclusively upon the radius. When both bones are broken, synostosis or adhesions between the bones might result in permanent disability of the hand by limiting supination and pronation.

The forearm bones of the average adult require pins in the diameter of two-sixteenths of an inch. Patients are occasionally encountered with extremely small bones with small medullary canals which will not permit the introduction of the two-sixteenths inch pins. For these cases, three-thirty-seconds inch diameter pin is necessary and although it does not give as secure a fixation as a larger pin because of the increased flexibility, it is essential that a small pin be used because otherwise distraction might occur with resultant non-union.

ULNA: The ulna can occasionally be pinned blindly because it does not have the tendency toward wide separation as does the radius. Since it is subcutaneous throughout its entire length, it can be exposed easily through a small skin incision. In recent cases, subperiosteal dissection is unnecessary. Through a small stab wound over the posterior surface of the olecranon a two-sixteenths inch drill hole is made through the cortex of the bone. Through this opening, a pin of sufficient length to extend well into the distal fragment is introduced and driven into the bone axially with a mallet until the point is seen to emerge at the fractured surface of the proximal fragment. By angulation and manipulation, the fracture is reduced and the pin is driven well into the distal fragment.

Because the bone is straight, there may be some tendency for the distal fragment to rotate when the fracture is located in the lower portion of the shaft, but if the pin is driven well into the distal fragment, rotation is not apt to occur.

RADIUS: The radius fracture, exposed through a minimal incision (one and a half to two inches) made on the postero-lateral surface of the forearm over the fracture site. With the wrist flexed, the styloid end of the radius is palpated, and over this point a one-fourth inch incision is made into the skin. A two-sixteenths inch drill is then passed vertically into the bone until the cortex is broken, turning the drill bit back and forth rather than making complete revolutions to keep from entangling the soft tissue. After this opening has been made, the drill bit is then rocked obliquely so that the point of the drill bit is directed toward the medullary canal.

A pin of suitable length is then introduced through this drill opening being directed as

nearly in the axial line of the bone as possible, until it strikes the far cortex of the shaft.

It should be observed here that the medullary canal of the radius is curved, frequently being slightly S-shaped. As the pin is tapped with the mallet, it may rotate as the sled runner point glides upon the uneven contour. It is possible that the passage of the pin might be prevented by the point striking the cortex of the bone on the convexity of a curve. Should resistance be met, simple rotation of the pin with the pliers will usually disengage the point, and allow the pin to be driven farther. After the fracture has been reduced, the pin is driven for a sufficient depth into the proximal fragment. Fixation is usually secure and rotation controlled. For this reason, it is necessary that the bones be in their proper relation before the pin is driven into the proximal fragment. In fractures of the upper third, the pin should be driven into the proximal fragment with the radius in the supinated position. In the distal two-thirds, the pin should be driven into the proximal fragment with the forearm in the neutral position. As has been pointed out in a previous publication, in the Colles' fracture, pinning is accomplished with the wrist pronated in the Cotton-Loder position.

At the completion of a pinning operation upon the forearm, because of the small diameters of the pin, there is some springiness which is evident at the fracture site. The pins possess flexibility and resilience to such a degree that, until the present time, we have observed no bowing of the forearm when splints were omitted. It is our feeling that these cases should be dressed with elastoplast, with or without external moulded plaster splints for the first eight to ten days until the soft tissues are healed. Thereafter, full function of the part should be permitted without any external immobilization whatever.

When this procedure has been followed, better healing is to be expected than by other methods, function is restored much more rapidly, and ultimate good union is to be expected with more certainty and at an earlier date than has been our experience with other methods. The pins are not removed for several months, for fear that good union might be apparent rather than real, as we have only x-ray evidence to guide us in determining when union is solid.

The security of the fixation in the radius is due to several factors: the hooked head

firmly grasps the styloid end, the shaft of the pin makes snug three-point contact with the inner wall of the medullary canal because of the tortuosity of the canal to which the pin must conform. The point impinging upon the side of the bone adds to the security. But above all, the impaction of the irregular surfaces by the longitudinal muscle pull, not only stimulates union, despite possible absorption of the bone ends, but increases the security of the fixation and the lateral pull of the pronator and supinator muscles increase this security by tending to pull the shaft of the bone laterally against the shaft of the pin.

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Public Health Problems As Indicated by Physical Defects in the School Age Child*

N. C. KNIGHT, M.D., M.P.H.

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State Board of Health and State Department of Education
Jackson, Mississippi

At present time the major activities of the School Health Service are in the following areas: 1) pre-service and in-service training of public health and public education personnel, physicians, welfare workers, and community groups, in school health, 2) stimulation, encouragement, and guidance to local health departments, local schools, colleges, and community groups and agencies, in the school health program, (Provide technical and consultant service and health education materials), 3) the Medical Correction Program, 4) nutrition services to children of school age and related groups, 5) assisting the local schools and colleges to develop a healthful program of physical education, and recreation, 6) school and community health education, 7) assisting the schools and colleges to improve their curricula in health instruction. Each of these areas are directly related to the problem of physical defects, and their correction.

The Medical Correction Program is that part of the total school health program that deals with finding and securing the correction of physical defects, among pre-school and school age children.

When school medical inspections were inaugurated late in the nineteenth century infectious diseases presented such an imperative problem that scant attention was given to children who had so-called "walking defects," which were not contagious or obviously crippling, or likely to "carry them to the churchyard." It was soon found, however, that such defects not only interfered with the health and the social adjustment of the child himself, but also retarded his school progress. In a book published in 1913 it was pointed out that many new ways of directing children's minds were being studied, but that practically nothing was being done to find out "whether their eyes, and noses, mouths, ears and brains, etc., were in shape to do business"; whether the physical conditions under which

the children were working were the best possible; whether the home conditions were wholesome; whether the children were learning habits of health." Although phenomenal progress has been made in saving the lives of school children since those words were written, we are still far from doing all that needs to be done to keep their eyes and ears and all other parts of their anatomies "in shape to do business."

We have just completed a study of "The age incidence of physical defects among white school children in Mississippi—and the percentage of corrections of physical defects obtained." This study is based on the 1947-1948 school year. A representative group of eleven counties was used. It reveals some interesting facts and figures and definitely points out some of our problems in the field of physical defects among school age children.

The purpose of the study was to determine what physical defects occur most often at what ages—and what percentage of them are being corrected. It was confined to the white school age group (6-18 years).

The school age group is approximately one third of the total population.

In the medical correction program a physical defect is defined as "any diseased or abnormal condition of an organ or part of the body that is susceptible to correction." Self-limiting diseases and major medical or surgical care is not included.

A correction is defined as follows: "When a physical defect has been restored to as near normal as possible, or a marked improvement is shown, then it should be counted as a correction."

Inasmuch as there was practically no medical service in the Negro school health program during this period the study applied only to the white group.

The following physical defects were studied because they are the ones that occur most frequently in this age group:

*Read at the staff conference of State Board of Health. Jackson, Miss., March 19, 1949.

Nutrition
Diseases of the throat
Intestinal parasites
Vision
Orthopedic
Diseases of the eyes
Diseases of the ears
Diseases of the nose
Defects of hearing
Diseased tonsils
Heart diseases.

Communicable diseases were purposely omitted because they are covered elsewhere.

Material for the study was taken from the records of the local health departments. The policy proposed by the School Health Service in regard to medical examinations of school children is as follows: a) that medical examinations be done on all children entering school for the first time within the calendar year of entrance, b) all other children irrespective of grade, who in the judgment of the classroom teacher and public health nurse need a medical examination, c) all children in the sixth and eleventh grades. We must keep in mind that medical and nursing services have for several years, and still are, confined almost entirely to children entering school for the first time and those in the lower elementary grades. Therefore, the physical defects found are evident mostly among those children entering school for the first time and those in the lower elementary grades.

For the 1947-1948 school year the total enrollment of white children in Mississippi schools was 274,998. The average daily attendance was 238,790. The total number of medical examinations of school age children for this period was 41,531 (17.4 per cent of the average daily attendance). This is an unusually high number of examinations, due to the work of the extern-clinicians. The rate of physical defects recorded was an average of 64.4 per 100 children. This does not include dental defects. On routine examinations the average rate of physical defects found was 54.1 per 100 and on special referrals the average was 84.2 per 100 children. The records show that 23.2 per cent of the total physical defects found were corrected. On routine examinations the percentage of corrections obtained was 18.6 and on special referrals the percentage was 22.8. There was a wide variation in both physical defects and corrections recorded, from one county to another.

There is substantial evidence to indicate that the percentage of corrections done was much greater than this—probably 40-50 per cent—but they were not recorded on the records in the local health departments, and therefore, not counted in this study! There is an outstanding need for more complete recording and reporting of corrections of physical defects by local health department personnel. At the present time a large part of the work that is being done in the medical correction program is not being recorded on the records in the local health departments and is not being reported to us. At the end of the year 64.2 per cent of the total number of children examined were o. k. Following routine examinations 66.6 per cent were o. k. and following special referrals 55.0 per cent were o. k. In other words, they had had the corrections of physical defects done.

The average of 64.4 physical defects per 100 children is unusually high. This would indicate that they were not found and corrected before the child entered school. The number of total defects increases with age throughout the school child's life. So does the percentage of corrections.

The average number of physical defects by defect per 100 children as revealed by this study was as follows: Diseased tonsils—24.6; intestinal parasites—5.1; vision defects—8.0; orthopedic defects—3.9; nutrition defects 10.4; diseases of the throat, other than tonsils—3.0; disease of the nose 1.3; diseases of the skin and scalp 2.6; disease of the eyes—1.2; diseases of the ear—2.4; heart diseases—1.6; thus the total being 64.4 per 100 children examined.

The study brought out the fact that when parents are present at the time the medical examination is done the number of defects found are higher than when parents are not present and the percentage of defects that are corrected also, are considerably higher. It was shown that when parents were present the average number of defects found per 100 children was 70.9, whereas when the parents were not present at the time of the medical examination the average number of defects found per 100 children was 63.8. It was also shown that the percentage of defects corrected when the parents were present at the time of medical examination was 32.9, whereas the percentage of defects corrected when parents were not present was only 14.8.

Among the children, who were found to have physical defects it was revealed that 34.1 per cent of them had one physical defect, 9.4 per cent of them had two physical defects and 3.5 of them had three or more physical defects. Among the children having physical defects 40.9 per cent showed defects on routine examinations; 58.6 per cent showed physical defects when medical examinations were done on a special referral basis, and 92.4 per cent showed physical defects when they were examined by their own private physician. This is about what we would expect. Rural areas show a larger number of children with physical defects than do urban areas. This no doubt is accounted for by more and better medical and nursing service and health facilities in urban areas than in the more strictly rural areas of the state.

In regard to the corrections of these physical defects, it was brought out that 18.6 per cent of them were corrected when found by routine medical examinations, whereas 22.8 per cent of them were corrected when they were found by special referrals from the classroom teachers.

Turning now to the age-incidence of the different physical defects that were studied, we find that the incidence of intestinal parasites is 3.0 per 100 children examined at 6 years of age, 8.8 at 8 years; 10.1 at 11 years and 5.8 for the age group 12-18. The incidence of nutrition defects varies somewhat with age. The study shows that at six years of age at the time the child usually enters school the rate of nutrition defects is 9.5 per 100 children. At the age of 8, the rate is 11.9, at the age of 11 it is 16.0, and then drops to 9.7 per 100 children, for the 12-18 age group. The study shows that orthopedic defects reach their peak age incidence at the 12-18 year age period gradually increasing from 1.8 per 100 at 6 years to 11.2 per 100 for the 12-18 year age group. Skin and scalp diseases seem to reach a peak age-incidence at the 8 and 10 year age levels, being 4.9 and 4.2 per 100 for each age. The study shows that vision defects gradually increase with school age from 5.0 per 100 children at 6 years of age to 16.7 per 100 for the 12-18 year age group. The incidence of diseases of the eye remains almost constant throughout school age, the average being 1.2 per 100 children. Up to this time, we have not been able to obtain reliable data on hearing defects in this study. Diseases of the ear show peak-age incidence in the 6-,

8-, and 11-year age group, the rate per 100 children, being 2.7 in each one and the average rate for all ages being 1.4. It was shown that the incidence of diseases of the nose reach a peak at 8 and 11 year age levels, being 2.3 and 3.1 for each. The study shows that the age-incidence of diseased tonsils reaches a peak of 30.4 per 100 children at the age of 8. Other diseases of the throat remain almost constant throughout the school child's life, averaging 3.0 per 100 children. It was shown that heart disease is present at the rate of 1.2 per 100 children at the age of 6 years and 2.3 per 100 at the age of 11 years. The average for all ages being 1.6. According to the supervisor of dental health of the State Board of Health 78.6 per cent of school age children in Mississippi have dental defects. These dental defects, in turn, lower the child's resistance to other infections and reduces the general health status of the child. This represents a major problem in the field of physical defects that needs attention.

Now, in regard to the percentage of each one of these defects that were corrected during the 1947-1948 year local health departments records show that 16.5 per cent of intestinal parasites had been corrected, 3.2 per cent of the nutrition defects, 29.4 per cent of orthopedic defects, 17.8 per cent of the skin and scalp defects, 55.3 per cent of the vision defects, 33.3 per cent of the diseases of the eye, 8.1 per cent of diseases of the ear, 26.2 per cent of diseased tonsils, 1.7 per cent of other diseases of the throat, 9.4 per cent of heart cases, and 38.5 per cent of diseases of the nose.

A study of examinations and corrections done by age groups shows that the percentage of total corrections done increases with age—from 18.3 per cent at 6 years to 33.6 per cent for the 12-18 year age group. However, when examinations, and corrections were done on a special referral basis there is a variation. The average number of defects per 100 children and percentage of corrections are higher in the special referral group.

The incidence of rheumatic fever and rheumatic heart disease in school age children in Mississippi is yet to be determined. At the present time we do not know what our problem is with rheumatic fever and rheumatic heart disease. Most of the medical examinations of school children that are done in our school health program in Mississippi are done by our local health officers. They are not well-

enough trained in recognizing the symptoms and clinical signs of rheumatic fever and rheumatic heart disease to suspect its presence. Neither are they nearly as well trained in the whole area of pediatrics as they should be in order to do the quality of health appraisals that should be done for this age group. We need to devise some means of providing our health officers with more and better training in the whole field of pediatrics in order that they would be equipped to do a better quality of work in this field.

In some instances, a person's religion will not permit him to have the correction of his children's physical defects done. Therefore, for this reason in some places some religions are an obstacle to securing the corrections of physical defects. However, I do not believe that this is as much of a problem now as it was 10 or 15 years ago.

Our public health medical and nursing personnel and public education personnel, particularly at the local level, need a great deal more pre-service and inservice training, not only in this area, but in the whole field of school health. The quality of work in the field of school health is not at all what it should be at the local level at the present time in many of our counties. There needs to be more joint planning on the school health program at the local level by health department personnel, school personnel, community agencies, and the medical and dental professions than is being done at present. Although we have made a great deal of progress along this line, there still needs to be a great deal more done than is being done at present. It is my feeling that if our public health personnel and public education personnel were better equipped by pre-service and in-service training in this field they would know a great deal more and better about how to go about it.

Many of our classrooms in our schools all over the state are very poorly lighted. Poor lighting in classrooms where children of this age have to do intensive work is very conducive to the development of some physical defects, especially the development of vision defects, as well as mental and emotional defects. School room lighting is a real problem

in many of our schools. However, I am glad to be able to say that something is being done at the present time to improve the condition and as time progresses I feel that the problem will be very much alleviated.

Another problem in this area is that of inservice training of parents and community groups in the total School Health Program. If parents and community groups understood the importance of correcting physical defects and the reasons why they should be corrected much better results would be obtained. More and better in-service training of parents and community groups can be accomplished through an organized program of health education.

The personnel of the School Health Service has already begun to give serious thought to the development of a medical correction program for Negro children of school age, as well as the development of an over-all Negro school health program. Up to this time about the only health services rendered in the Negro school health program have been chest x-rays for tuberculosis, some venereal disease work and some immunizations against communicable diseases.

As the total Negro education program in Mississippi is improved, the School Health Service Program for them also must improve. Providing a health service program for Negro school children is going to be a real problem for us. At the present time we do not have enough public health service personnel to carry on the desired quality and quantity of health services in the school health program for the whites.

One of our most serious problems at the moment in the medical correction program is that of providing finances at the state level to pay the state's part for corrections that are done for the children of medically indigent parents in the various counties. The program has grown rapidly in recent years, yet the total budget of the School Health Service has remained static for the last four years.

There are other public health problems indicated by physical defects in the school age child. However, time will not permit us to go further into them here at the present time.

Treatment of Gallbladder Disease*

Demonstrated with Lantern Slide and Movie Film

V. B. PHILPOT, M.D., F.A.C.S.

Holly Springs, Miss.

I SHOULD like to explain to begin with that in discussing diseases of the gall bladder we in discussing diseases of the gall bladder we shall only mention those due to a bacterial infection and will not include neoplasms, abnormalities, and other conditions—and before discussing the treatment of these conditions, I shall mention briefly the generally accepted theories as to the causes of gall bladder infections. Gall bladder infections occur as a result of the entrance of bacteria into the gall bladder into the gall bladder contents or into the walls of the gall bladder itself. The several approaches for the entrance of bacteria are: first, through the blood stream; second, an ascending infection from the intestinal tract as occurs frequently following typhoid fever; third, a descending infection or from bacterial infections of the liver itself; fourth the lymphatics.

Now in methods of diagnosing infections of the gall bladder as well as differentiating this condition from other abdominal troubles, it is a long drawn-out story. So I shall only give here very briefly a few of the common symptoms. First, severe pain in the upper right quadrant frequently referred to the back, nausea and vomiting, and dyspepsia of long standing. Such symptoms are very pronounced and almost diagnostic. We do not have these, however, in a great many cases of gall bladder disease and we have to depend on such symptoms as dyspepsia, bloating, gaseous formations, especially in obese and middle-aged persons, intolerance to fatty and greasy foods, also the aid of x-ray and laboratory findings.

The duodenal tube as an adjunct to cholecystic disease has many enthusiastic advocates. Failure to obtain gall bladder bile, findings of blood or pus, or pathological organisms, etc., should always be taken into consideration; but our opinion is that the findings of the duodenal tube is of the least importance in making a diagnosis of cholecystitis.

Cholecystography, however, has become a definitely established aid in diagnosing since

it was first described by Graham and Cole in 1924. We use the iodekin dye, either intravenously or by mouth; when used intravenously, x-raying the gall bladder within four hours, followed by other pictures up until eight hours; when used by mouth, x-raying the gall bladder in twelve hours, followed by other pictures in two hours. After the gall bladder is visualized a fatty meal is given and another picture is taken two hours later to determine how it empties. A normal gall bladder casts a regular outline shadow which varies in size and density. Experience has shown that a fair percentage of gall bladders showing a normal cholecystogram have diseased gall bladders, so we cannot depend too much on this. The absence of any shadow at all in ninety-eight per cent of the cases according to Walters indicates cholelithiasis. Less than fifty per cent of gallstones as a rule will show. Frequently an empyema of the gall bladder or a gall bladder whose walls are badly thickened will show on a flat plate without any dye whatsoever. This, of course, is very significant. Finally, the presence of jaundice with symptoms of a very acute pain is, of course, almost diagnostic of a stone in the common duct.

Normal gall bladder.

Stones.

Strawberry gall bladder.

There are many varieties or stages of cholecystitis, varying from slight catarrhal inflammations through all the stages of inflammation to empyema of the gall bladder. Stones of various sizes, shapes, and number may be found at any time. Also there may be considerable inflammation of the surrounding structures and may find adhesions of the hepatic flexure of the colon, omentum, duodenum, and liver. The presence of jaundice in these conditions is dependent on obstructions in the biliary passages and the more complete the obstruction the deeper the jaundice.

Medical treatment can rarely be depended on to result in a cure, but there are many instances when an immediate operation cannot be done, so some type of medical treatment may be tried in the hope of temporary relief

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and consists briefly in the regulation of the diet, use of drugs favoring evacuation of the gall bladder, and duodenal drainage. The diet should be bland in character. A high fat intake may improve the general nutrition of a thin patient as well as favor evacuation of a stagnant gall bladder. On the other hand, in obese patients the fat intake should be low in order to reduce weight and prevent distress. Small doses of magnesium sulphate before breakfast are said to relax the sphincter of Oddi and favor evacuation of the gall bladder. Patients with hyperchlohydria and dyspepsia may be relieved by alkaline powders. Attempts to sterilize the bile by any form of medication has no real effect.

The question of operating in the early stages or in the presence of acute cholecystitis continues to be a subject of wide debate and our opinion is that such procedure should depend on our study of the patient's condition. Each case should be treated individually and no set rule adopted in advance concerning the time of operation. I believe, however, the general consensus is that if the patient is seen within twenty-four hours following the development of acute cholecystitis an operation should be advised and that the risk is not so great as the risk of perforation, but if the patient is not seen before forty-eight hours elapsed and especially if his condition is improving, it is the wise thing to wait until the acute symptoms subside.

Remembering that one of the functions of the liver is glycogenic and any disease or operation on the gall bladder or ducts to a certain extent produces liver disturbances, administering of glucose intravenously as a pre-operative and postoperative procedure is without a doubt a necessary adjunct in the treatment, and the duodenal drainage as advocated by Wangenstein is also of the utmost importance. Another adjunct to the treatment of gall bladder cases where jaundice is present has come to us in the last few years which in my opinion is life-saving. That is the use of vitamin K and gall bladder salts for the purpose of preventing hemorrhage following surgery on a jaundice patient from biliary obstruction. Also we must not forget the value of blood transfusions, prior to surgery as well as after surgery, when indicated.

Each surgeon has his choice in reference to the anesthetic. During the last several years we have been using spinal more and more and we have found it to be a very satisfactory

anesthesia for patients who are in fair or good condition. In poor risks I still say infiltration or local anesthesia is the anesthesia choice, especially where we expect to do no more than to drain the gall bladder and save a life rather than do a classical operation and maybe have a dead patient.

For more than five years we have used the **transverse incision** almost altogether, and if you gentlemen haven't already used this incision, try it once and you will never go back to the longitudinal or any other incision. You can get good exposure by it and best of all the natural thing for a wound to do from a transverse incision is to come together and you will have no hernias. Cholecystectomy is the operation of choice in the majority of cases. It offers the best chance for a permanent cure, but as I have already stated we had rather have our patient live and not be entirely cured by doing a cholecystostomy in the bad risk individuals than to remove the gall bladder completely and run the risk of our patient's succumbing to the shock of the operative procedure. In our own work three out of four gall bladders are removed entirely.

There are several modifications of what is known as a **partial cholecystectomy** which is also in my opinion worth considering and doing in many cases. I shall mention only two or three of these. First, the Pribone, removing the bladder contents and destroying the entire mucosa by cauterizing. Second, one suggested by Thorek, whom I had the privilege of assisting many years ago, of removing as much as possible of the gall bladder wall and electric coagulation of the remainder. Third, I am sure you all have heard the late Dr. Haggard describe his operation of partial cholecystectomy which was done by removing the gall bladder walls down to the cystic duct, leaving only that part adjacent to the liver and enough of the side to incorporate a small rubber tube. This operation we have done numerous times and have found it very satisfactory and have had no postoperative trouble. In all cases it is very necessary, of course, to examine all bile ducts to see if there are any stones in them and should one be present incise the duct and remove the stone, inserting the ordinary T-shaped rubber drainage tube in the duct. The technique of cholecystectomy performed by our group we can show better by a little film we have made of one of these operations. (Film).

Medical Ethics*

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IT SEEMS to me that any discourse on medical ethics that I might offer would amount to very little. I can recall only a very few instances in which one has been charged with a violation of ethics as relates to medicine, and even in these instances there has at least been some indication that the "hit dog was howling." And if this is the case, I could not point the accusing finger, for there is apparently nothing for the poor dog to do except to fight or howl; and then it becomes the nature of the animal and not a case of ethics.

The case of medical ethics may have been used as a weapon with which to strike at the law of the survival of the fittest, and has never met with favor with the undefiled mind. I notice that the individual who is never charged with a possible breach of ethics is seldom if ever complimented for his righteous acts. It may be that the straight and narrow path is so crowded with conscientious physicians that it is hard to keep off the toes of someone who is going along with you.

It has been said so many times that the physician is a gift from God, we may believe it ourselves, although after many years of association with this wayward crowd I am beginning somewhat to doubt this. However I do agree that there is something supernatural about the average physician, for we are the only profession that can meet at the convention halls and make a palatable mixture of politics, science, food and liquor; become rather boastful about the amount of income taxes we pay (even if the Treasury Department is short of funds); then adjourn perfectly satisfied with our accomplishments and predict great things for ourselves in the future. I assure you members that I am making no personal reference or trying to name the color of the sheep.

I have been unable to accept the Golden Rule as a criterion or text for medical ethics, although it is recorded in the Book of all books and would be a wonderful standard if we all reacted to the same thoughts alike. But as long as we are entitled to free thought

and free speech and have the right to place our own individual interpretation on the passage, I feel sure there would be a wide diversity of opinion. Therefore, I have endeavored to confine my remarks to a channel in which we can all agree, and call ethics as it relates to medicine "My Duty to My Comrade." I find that even this caption becomes a changing scene as we pass from the hour of graduation to the day of retirement. I find that my duty to the struggling youngster is quite different from what is demanded of me by the well established physician. And when we approach the declining years, the scene makes a radical change again.

In a general way I should think that all physicians have a common right, and under some rare circumstance one might even enjoy some right peculiar to the individual. I should think that one has the right to try to make himself the best physician in his community, and by the practice of his increased knowledge make himself the most valuable and even the most attractive man in the profession. One has the right to identify himself with various civic or church organizations and become more rapidly acquainted in his community. One has the right to choose his own business and professional associates and to place a value on his own service, all of which he is not professionally bound to discuss with his closest friends.

To be courteous to a referring physician is not a breach of ethics but rather a duty from friend to friend. To buy a reference is unpardonable (and I do not believe that the Central Medical Society has a guilty member.) To attempt to convey the impression that you have a certain gadget, or know of a certain drug or combination of drugs not available to all physicians, or have some secret trick is an indictment of your intelligence and ability.

We are face to face with the realization that there are no two individuals exactly alike. One will enjoy and thrive on the things that another can not tolerate. Those who like the playthings of life that keep them so fit to meet their duties may fail to understand the individual who prefers to pass the time in a more isolated way. But both are very

* Read before the Central Medical Society, Jackson, Miss., September 6, 1949.

likely wholesome individuals with the very best of intentions. These differences in personalities should be kindly understood before allowing our thoughts to crystallize into unkind criticism. We certainly should be thoughtful enough even in our unguarded moments not to remark that he plays too much, or that he is too unsocial to enjoy friends. Again we have the individual in whom lurks a certain amount of timidity that is not so easily overcome; he might be called over-reserved, unsocial or just plain dumb. But when some instance brings you into closer relations, you usually feel that although he is a peculiar cuss, he improves on acquaintance.

When a young man begins the practice of medicine he has gone through his years of strenuous studentship, passed many examinations and received some honors (if only from his own family who expects him to achieve great things) and hopes to receive some early recognition from the more substantial members of the profession. He may be of the meek and lowly type, a quiet retiring gentleman whom we all soon learn to admire; or he may be the type that places rather a high estimate on himself, manifesting some apparent ego, all of which will shade out as time proves him to be just one of the ordinary level. Here we have two distinctly different personalities to deal with, and it is the professional duty of each of us to lend the assisting hand and at least make no desultory or unkind remarks, but rather allow these peculiarities to guide us to kindness rather than cruelty. It becomes us even to accentuate professional courtesies, for it may change an entire life for good.

In the second stage of the three epochs classified, men have grown more seasoned in professional life; and if the correct impressions are made and examples set for good in the more flexible years, they doubtless have become valuable and respected physicians and citizens. At this period they usually need the professional fellowship that so justly belongs to

them. For as a rule they have passed the stage of looking for someone to commit a breach of ethics; have become more tolerant and less sensitive to the acts of competitors (if indeed there is such a thing as a competitor); show due regard for the opinion of members of the profession; and their own conduct is uppermost in mind rather than the conduct of someone else. Here a doctor becomes an admirer of medical ethics rather than a demander.

The third epoch is as automatic as time itself and in many instances is met with no rebellion, but is accepted gracefully as a natural consequence. Time has brought a noble soul to a period when there is only kindness in his heart, when personal ambition is equaled by admiration for the profession he once served so well. He proudly accepts the fact that more recent standards of training have produced efficiency, and he gracefully bows to more extensive training. He probably realizes that he is showing the marks of time and service, and it is easy for him to feel that he has but little place in the association of physicians, and he may feel the demand and even the desire for self isolation. It is at this stage, gentlemen of the profession, that a little kindness and a little recognition may produce a few proud moments. Remember he holds no malice, no enmity for anyone. He labored in an undeveloped field of science, and realized that conditions were far from satisfactory. He promoted the hospital systems that you have improved so much; he assisted in the founding of such organizations as the College of Surgeons and the College of Physicians that serve as your protectors today. Along with these accomplishments he laid a wonderful foundation on which your medical mansion may be erected. With these thoughts fresh in our minds I would suggest that we not let these passing figures practice self isolation, but take a little time to assure them that you do appreciate their legacy.

Phlyctenular Kerato-Conjunctivitis*

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PHLYCTENULAR kerato-conjunctivitis is a characteristic nodular affection, occurring mainly in children showing some metabolic defect.¹ It is caused by the corneal and conjunctival epithelium developing a sensitivity to an endogenous toxin or protein from foci elsewhere in the body.¹ It is also known as eczematous conjunctivitis (Balzy 1847), scrofulous or strumous ophthalmia (Lawrence 1876), lymphatic conjunctivitis, phlyctenular ophthalmia and ophthalmia pustulosa.

The epithelium of the cornea and conjunctiva having become hypersensitive to this toxin, or protein, may on subsequent contact with it develop the typical phlyctenular lesion. This protein or toxin may be brought to the eye by the blood stream, by tears (Weekers, 1927; Riehm, 1928), or by exogenous inoculation in patients who are exposed to and come in contact with the sensitizing bacteria in their environment.¹ The sensitizing agent is always endogenous and bacterial: exogenous proteins, such as pollens play no part in the etiology (Sorsby, 1936).

The most common sensitizing agent, by far, is tuberculoprotein or toxin, coming from an early tuberculous process in the lung or a gland. Other proteins and toxins have been found to cause this reaction in humans and experimental animals. Schiech in 1932 reported typical phlyctenules developing in a patient with old gonorrheal arthritis following a conjunctival infection with gonococcus. Experimental animals were rendered sensitive to horse serum (Riehm, 1928, and Londoni, 1930), staphylococci (Funashi, 1923), and strawberries (Lenoine in 1928). Subsequent instillation of these toxins into the conjunctival sac produced typical phlyctenular lesions.

This condition is seldom found during the first year of life and is most common before puberty², but may be found at any age. It is most often found in weakly undernourished children living under poor hygienic conditions on a diet rich in carbohydrates, is usually associated with eczema, diseases of the upper

respiratory passages, chronic irritation of the nose, large adenoid growth, and large tonsils^{1,3,4}, and may follow acute exanthema. The great majority of cases are of the scrofulous diathesis showing either pulmonary or glandular tuberculosis. DeSchweinetz, fifty years ago, stated, "Some authors believe astigmatism bears a relation to its development." Ball says, "It is often associated with ascarides and lumbrici." Fox, and others, that hereditary syphilis is an important factor. Most of these conditions, and many others that have been found to be associated with this disease, are incidental debilitating factors that might predispose to the development of any disease, but are incapable by themselves of producing the specific phlyctenular lesion.

DeWecker said in 1897, "I see in the appearance of the phlyctenule and eczema merely the sign of feeble cuticular resistance in general." Many observers have searched for an organismal cause of this disease. Tubercle bacilli have never been found in the lesion.^{1,3} Gifford and many others found staphylococci present. These organisms were secondary invaders or contamination, as no records have been found of anyone having been able to produce phlyctenules by staphylococci unless the eye was first rendered hypersensitive and then the cocci instilled into the conjunctival sac.

Pathology—The phlyctenules begin with an infiltration of the sub-epithelial layer of the conjunctiva and cornea respectively with leukocytes which soon invade the epithelial coverings forming a raised grey or yellowish nodule of varying size. If the hyperplasia of the cells is pronounced the epithelium over the apex of the nodule sloughs off and an ulcer is formed. Although the name phlyctenule is derived from the Greek word "phlycten," meaning blister, the lesion is not filled with serum or pus, but is solid until ulceration takes place¹. Hayashi, in 1909, found wandering cells and epithelioid cells with true caseation in phlyctenular lesions. No one else, so far, has duplicated his findings.

Symptoms—The first and most essential sign is the development of one or more small grey or yellowish nodules at some point on

*Read before the Section on Eye, Ear, Nose and Throat at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949.

the conjunctiva or cornea, frequently at the limbus.

Although the phlyctenules develop most commonly on the bulba conjunctiva, or the cornea, the palpebral conjunctiva is occasionally affected in severe cases of the bulbar disease, and their presence can be limited to the lids alone. The palpebral form is relatively common in India¹. In the conjunctiva the phlyctenule is surrounded by an area of hyperemia, the non-affected parts of the ocular conjunctiva usually have a normal appearance, there may be associated mild catarrhal conjunctivitis. Soon after a phlyctenule appears in the conjunctiva it may be absorbed without going through the stages of ulceration, or it presents a small ulceration at its apex, and by progressive destruction sinks down to, or slightly below, the surrounding tissue. It may heal without leaving any permanent changes in the conjunctiva—the entire process lasting from a few days to two weeks. Relapses and appearances of more phlyctenules are common, and the new ones often form before the first ones have had time to run their course. If there is no secondary infection, and the cornea is not involved, the patient may experience very little discomfort other than itching and lacrimation. Secondary infection is quite common because of the class of patients usually effected.

Phlyctenules may develop in the cornea, *de novo*, as stated above, or may spread to this tissue from the conjunctiva¹. When the cornea is affected the symptoms become very pronounced. There is the most intense irritation, lacrimation, photophobia, and blepharospasm. In the more severe cases the pain and blepharospasm render the patient completely helpless. The corneal phlyctenule may clear up without ulceration, but usually ulcerates as in the conjunctiva. A simple ulcer may clear up, leaving no opacity of the cornea, or may progress, forming fasciculi, pannus, or deep scrofulous infiltrations.

In fascicular keratitis an ulcer advances from the margin to the center of the cornea, drawing after it a fasciculus of blood vessels; the advancing margin of this ulcer remains active at the apex of the fasciculus while the peripheral part heals. Occasionally, as a result of persistent phlyctenular involvement the cornea becomes cloudy, uneven, and covered by superficial vessels forming a phlyctenular pannus. Deep scrofulous infiltrations occur as a grey clouding with indistinct margins ap-

pearing under Bowman's membrane, the cornea over this takes on a stippled appearance. It becomes richly vascularized with both deep and superficial vessels. This may clear up to a remarkable extent, leaving very little opacity, or suppuration may develop and extensive necrosis occur with loss of overlying epithelium. This leaves a dense highly vascular scar that is permanent. If the disease is extensive, or repeated relapses have occurred, large areas of the cornea may be affected. If these lesions become secondarily infected a malignant pustular form of infiltration may occur, and by a process of acute suppuration eat its way rapidly through the cornea, resulting in perforation.

Differential Diagnosis—The diagnosis is, as a rule, easily made from finding the characteristic phlyctenule. At times this condition may be confused with, and must be differentiated from the following: episcleritis—the nodules are flat or slightly raised and usually appear on the temporal side. They are hard and immovable, they never ulcerate, the cornea is rarely involved. Acne rosacea keratitis usually occurs later in life and is associated with acne of the face. Catarrhal marginal ulcers appear as complications of acute or subacute catarrhal conjunctivitis. Vernal conjunctivitis of the limbal type is characterized by hyperplasia of the tissues at the limbus without tendency to ulcerate. Scrapings from these areas contain large numbers of eosinophils. Phlyctenular pannus is distinguished from trachomatous pannus by the hypertrophy and follicle formation of trachoma, and by the pannus being found anywhere on the conjunctiva, and not only in the upper areas as in trachoma. The pannus of acne rosacea and staphylococcic keratitis is differentiated only by other evidence of such disease. The degenerative pannus of old glaucomatous or atrophic eyes is differentiated by the presence of glaucoma or atrophy. Deep scrofulous infiltration may be confused with interstitial keratitis, as a rule, interstitial keratitis occurs in older people—the cornea shows deep-seated, vascularized, grey or salmon-colored infiltrates that do not ulcerate. Almost invariably the Kahn test is positive.⁵

Treatment should run along three lines simultaneously—local, specific, and general.

Local Treatment—The milder cases are very amenable to treatment. Most of these would run their course and clear up spontaneously if it were not for relapses and recurrences.

Most of the authors studied recommend the use of calomel powder dusted into the conjunctival sac once daily, cautioning that this should not be used if iodides are being given. Yellow oxide of mercury, 1 per cent to 2 per cent, is also recommended. The sulfonamides and antibiotics in both liquid and ointment forms have been used with varying results. In my opinion these serve mainly to prevent secondary infection. Cresatin (metacresylacetate), 3 percent tincture of iodine or phemerol, may be used on the superficial ulcers with good results. In the deeper ulcers of the cornea phenol, trichloroacetic acid, or electro cautery may have to be used. In cases of deep corneal ulcers, or if iritis is present, the eye should be atropinized. In the fascicular type the leading edge, or active part, of the ulcer should be cauterized as in the deep corneal ulcer.^{1,5} The fascicular bundle should be severed at the margin of the cornea, as in this instance vascularization seems to be a hindrance to healing rather than a help, probably due to the continued transport of the exciting allergin to the cornea by the blood stream.¹

In our experience hot compresses for fifteen to twenty minutes every two or three hours seem to be very beneficial, and as a rule make the patient more comfortable, especially if there is corneal involvement. Anesthetic ointment, metycain 4 per cent, is used most often by us, will make the patient more comfortable, and often help relieve blepharospasm and photophobia. Specific treatment should always be attempted.¹ If patient is tuberculin positive, a course of tuberculin should be instituted. Lachman and Menda⁶ reported using 1:100,000 tuberculin increased to 1:10,000 intra-nasally in cases of this disease with x-ray evidence of active pulmonary tuberculosis. After therapy there was ocular and systemic improvement. Others have reported improvement following the use of tuberculin intradermally. R. W. Stephenson reports, in the "Lancet" of July 1948, a case caused by allergic reaction to staphylococci that was cleared up by 100,000 units of penicillin given intra-muscularly. Bowles and Brites⁷ report the use of anti-allergic drugs in fifteen tuberculin positive children with positive chest x-rays, effected with this condition with no benefit. If no sensitizing factor can be discovered protein shock (milk or typhoid) may be used.

General Treatment—A search should be made for any infective focus, especially in

the nose, throat, and sinuses. Tonsils and adenoids should be removed if indicated. All eczematous areas should be cleared up. Fissures at the outer canthus, if present, should be cauterized with 10 per cent silver nitrate. Improvement of the general hygienic conditions and diet is very important. Meticulous cleanliness of the head and body, as well as of the eyes should be insisted upon. Duke Elder says, "It is well to remember that removal of lice from the hair has frequently acted as a charm." The diet should be corrected by cutting down on carbohydrates, and increasing proteins, with an abundance of fresh fruits and vegetables¹, and multiple vitamins in some form if indicated. The patient should be made to stay out of doors as much as possible, using proper methods to protect the eye. The eyes should not be bandaged unless there is a very severe corneal involvement. In this case the bandage will have to be changed frequently because of the profuse lacrimation and danger of causing excoriation of the lids and surrounding skin. Preparations containing iodides, arsenic, and iron may be given orally. Calcium in large doses is also thought to be of value.

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DISCUSSION

Dr. H. K. Rouse, Jr. (Gulfport)—Dr. Wilkins has given us a picture of phlyctenular kerato conjunctivitis in such a manner as to bring the literature on this subject up to date. This is a very old subject, in fact, literature on this condition is rather common in the eighteenth century. In recent years however the articles are remarkably scarce. Whether the disease is disappearing or whether the writers feel that all has been said is open to speculation.

Foreign literature almost universally indicts the tubercle bacillus as the etiologic agent. This is also true in our literature arising from pediatric clinics. Our ophthalmologists, however, have not so completely agreed on the etiology. The late H. Dickson Bruns of E.E.N.T. Hospital N. O. reporting 451 cases did not ac-

cept T. B. as the prime etiologic factor. Dr. Buffington who has probably seen as many cases as any living ophthalmologist at least in this section and who as most of you know has always been vitally interested in this disease always stressed the nutritional factor as to the cause of this condition. Many others have not been able to accept the T. B. etiology as completely as our pediatricians and the writers of other countries.

Is this disease becoming more rare? Certainly it seems to be in our practice. In the pre-war days we had a good many patients suffering with phlyctenular disease and now we seldom see a case.

As to the treatment there is almost universal agreement and if properly enforced most of the cases go to complete recovery. All agree that dietary (elimination of excess carbohydrate), rest and hygiene be emphasized. If the patient is sensitive to tuberculin desensitization is in order. Foreign protein, especially boiled milk is highly recommended and it is imperative that foci of infection be removed. The above with almost any type of local therapy will give gratifying results.

Dr. W. B. Holmes (McComb)—Dr. Wilkins has given us a splendid discussion on phlyctenular ophthalmia and has covered it so well that there is little that I can add. He mentioned the sensitivity to tuberculo-protein as being the most common etiological factor.

I would like to stress the significance of tuberculosis as the cause of phlyctenular ophthalmia. Insofar as the tubercle bacillus has not been found in phlyctenulae, and in that the implantation of the organism in the conjunctiva produces a tuberculous reaction and not a phlycten, the evidence is negative, but a mass of observations is available implicating tuberculous infection rather than tuberculous disease.

Sorsby, in his review of the literature in 1942, revealed that while malnutrition, pediculosis and fecal sepsis and non-bacterial allergy are seen in cases of phlyctenular ophthalmia, there is no evidence that these conditions occur with greater frequency in such patients compared to the normal child population, and no evidence that any one of these factors could explain the occurrence of phlyctenulosis in the mass. The available data do, however, indicate tuberculous infection as a dominant feature. The evidence consists of:

1. A high incidence of positive tuberculin reaction. This was noted in 78 per cent of children under the age of six years reported in the literature and in 81 per cent reported by Sorsby.
2. A high incidence of radiologically demonstrable tuberculous chest lesions. In Sorsby's series it was found in 72 per cent of the cases (368 cases out of 510).
3. A considerable incidence of a personal history of tuberculous disease Sorsby noted 6 per cent in his series.
4. A considerable incidence of a family history of tuberculosis. This was observed in 28 per cent in a series of 263 cases.
5. An unfavourable after-history in many cases. Sorsby found a mortality rate from tuberculosis of .8 per cent in the phlycten group against .1 per cent in the control group.
6. There is a significant incidence of previous phlyctenulosis in adults suffering from tuberculosis.

The laboratory findings in phlyctenular ophthalmia vary. Several observers have noted tubercle bacilli in the bloodstreams, but none have recorded the presence of tubercle bacilli in the phlycten. Stomach washings have been negative. The sedimentation rate in 79 per cent show a rate of over 10 mm., 1 hr.

It must be mentioned that in some 10-15 per cent of cases there is no evidence for tuberculous infection. These cases illustrate the non-specific nature of the phlycten reaction and some observers feel that non-tuberculous phlyctenular ophthalmia tends to run a distinct clinical course. The disease is much more protracted, the response to treatment is poor, and there is a marked tendency towards massive scarrings of the cornea which shows facette-formation rather than the localized opacities seen in the more usual type.

So it might be concluded that phlyctenular ophthalmia is manifestation, not of tuberculous disease, but of tuberculous infection, the phlycten making its appearance only when a hyperallergic phase is present and there is a suitable exciting factor.

Dr. S. B. Caruthers (Grenada)—My first introduction to phlyctenular kerato-conjunctivitis was a student at Vanderbilt. We thought that phlyctenular kerato-conjunctivitis was instinctively tubercular, and if it did not respond to the tubercular treatment the diagnosis was wrong—it was something else.

In my experience I haven't seen much of it in the last few years, but in the past every case I have seen that I was sure in my mind was a typical phlyctenular conjunctivitis responded very nicely to a very few shots of tuberculin, 100,000 m. or weaker. I feel sure that there are some other causes, as Dr. Wilkins has said, that are due to an endogenous infection or infection elsewhere in the body, and I think you would get the same reaction in the eye. It is hard for me to visualize phlyctenular kerato-conjunctivitis by pictures

I have seen. I don't believe I can give in words what I am looking for, but the typical case I see is a child that comes in with photophobia and we have a time getting him to open his eyes. The eyes are red and there will be slightly raised, whitish one or more lesions at or near the limbus that I don't see more than a millimeter or two away, either on limbus or conjunctiva. I have always obtained results with tuberculin. I also give cod liver oil and vitamin B, which maybe do some good.

Observations On the Workings of the British National Health Plan*

J. P. WALL, M.D.

Jackson, Miss.

ON A recent visit of eleven weeks to the British Isles a study was made of the British Health Plan. In this time conversations, questions, and answers, were carried on with forty-three different classes of people. Among these were physicians, internes, nurses, ministers, business men, bankers, workmen, chauffeurs, government employes, etc. Of this group interviewed only three approved of the scheme. Of these three one was a postal employee, one a country doctor, whose income was increased and the third was a barber in London.

The attitude of these forty men and women who disapproved of the scheme was that it was not what was promised by the Labor Government and that it was impossible of fulfillment.

1. The doctor does have more patients, his limit being 4,000 on his panel. The average doctor has about 2700.
2. The increased number of patients means that the doctor necessarily has less time for the individual patient and his practice approaches an assembly line procedure—patients being classified for certain kind of medication, and many times given the prescription without an examination, the prescribing being solely on the patient's own story of his ailment.

3. This procedure is making for an inferior grade of medical practice, to the detriment of the doctor and surely an injustice to the patient.
4. It is impossible to carry out the work a doctor is supposed to do, and as a result there are long queues of people waiting for hospitalization. The average case takes six months to be admitted to a hospital, while a case of tuberculosis waits nine months before admittance.
5. It makes for dishonesty, as witness the fact of many notices in the papers where dentists had been fined for falsifying their reports.
6. When a patient can not get on a queue, he is forced to pay for private treatment (which can always be had if the patient is willing to pay).
7. The red tape, directives and paper work, as in all governmental agencies, is burdensome. There are eleven different forms to be filled out by the physician for each patient.
8. Illustrative of how impossible is it to the work expected of the physician, it may be mentioned:

- a. Toupees prescribed by doctors cost last year over \$300,000.00 and they are not yet all received.
- b. Dentures are many thousands behind delivery.
- c. Over 3,000,000 eye glasses have not

* Observations made during the author's recent sojourn in England. Dr. Wall, a member of the A.M.A. House of Delegates, made this contribution at the request of the editor.

been supplied, although prescriptions have been written for them.

9. The cost is prohibitive. The first year was 50 percent more than the governmental estimate. The Minister of Health has ordered a reduction in the fees for oculists, dentists and hospital fees.

"As a result of the 10 per cent cut in hospital expenditures, ordered by the Minister of Health, a number of hospital boards and management committees have announced that they can economize only by closing hospital beds" (British Medical Journal, May 21, 1949-Pg. 917).

10. The attitude of the physician is rapidly changing because his responsibility is due the government primarily and secondarily to the patient.
11. Such a system is a sure road to collectivism, bankruptcy, poverty, and ruin of a

nation. This is shown very conclusively by the awful plight Britain finds herself in today. Austerity of living, devaluation of the pound (from \$4.86 2/3 to the latest on September 17) to \$2.80. Much of this is traceable to the National Health Plan.

12. There is no doubt that the high cost of living in the British Isles is due to the high cost of socialism.

13. America should keep in mind the dictum of Lenin,

**"THE KEYSTONE OF THE ARCH
OF THE SOCIALIZED STATE IS
SOCIALIZED MEDICINE"**

14. The Senate Bill No. 5 introduced in the eighty-first congress should be studied very carefully. In its over 15,000 words there is no assurance of the kind of medical care to be offered our people.

Experience of a Pediatric Consultant In Public Health*

TOM MITCHELL, M.D.

Memphis, Tenn.

FOR A little more than a year I have been pediatric consultant to the counties in north Mississippi for the Mississippi State Board of Health. The secretary of your association invited me to relate some of my experiences while serving in this capacity, thinking that they might be interesting to you; and perhaps also by reviewing what has been observed and done in the various localities, the service rendered by the Department of Pediatrics of the School of Medicine of the University of Tennessee to the people, the doctors and nurses, and the local health departments in our part of the state might be improved and put to a fuller use.

For some time an obstetrical consultant from our school served in a capacity similar to the one now maintained by the Department of Pediatrics, and in south Mississippi both an obstetric and pediatric consultation service from Tulane University have been maintained for the past few years. A little over a year ago the State Board of Health of Mississippi approached the Pediatric Department of the

School of Medicine in Memphis seeking a consultant on a part time basis for north Mississippi. This arrangement would have the counties located closest to Memphis supplied with a consultant, working three days a week, who would have made regular visits to the various health offices on a schedule. The Pediatric Department did not have funds available to meet the expense of such a plan, although it felt it would have profited by such an arrangement, and since that time has been hoping that shortly it would be able to arrange for it; in fact plans leading to this sort of connection are still being considered and it is our desire that at a not very distant date they may be realized.

It then was suggested that until such plans could be arranged I should try to act as consultant in this region and as frequently as possible visit these health departments giving one day each week to this work. This was agreed upon and around forty such visits have been made. Some of these have been made by Dr. J. N. Etteldorf, associate professor of pediatrics, at times when I was not available in order that the schedule might be more completely filled.

*Read before the Section on Public Health and Hygiene at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949.

The reasons for our department's favorable consideration of this proposition were based on the belief that more momentous developments are changing the complexion of medical education, research and practice than ever before in the history of medicine and that political, economic and scientific factors combine to make this thing so. Today one who graduates in medicine may not any longer safely or profitably set himself up in a given locality intending to care completely for his own clientele. He soon finds himself dependent on some individual, or group or organization for assistance in the diagnosis; clinical, laboratory, x-ray or otherwise, and frequently for treatment as well. So much has the field of medicine grown that one individual may not master it all.

Also a new ideal of medical practice has been set up. While formerly the treatment of the acute diseases overshadowed all other practice, now these are pushed aside by the care of the chronically ill patient, the psychiatric patient, the application of the principles of the present knowledge of nutrition and preventive medicine and a consideration of the advances in the fields of diagnosis and therapy.

Besides these the doctor must be familiar with conditions peculiar to prematurity and old age, the degenerative conditions and the influence of social status, industry and economic position. He must be familiar as well with the knowledge we have acquired on the subject of maintaining good health. The magnitude of this knowledge often allows a gap between medical knowledge and medical practice and many people because either of resistance or financial inability are deprived of the best medical care as we know it today.

While the state of Mississippi has for many years had some consultant and advisory connection with the University of Alabama in an extension program it has only been in the last few years that the national medical associations and the American Association of Medical Schools have interested themselves in projects of this nature. The Committee on Medical Education of the American Medical Association has plans for extension courses and consultation services, and last year some of the activities of the Mississippi State Board of Health in this connection, were shown in the scientific exhibit at the Atlantic City meeting of the American Medical Association. The Academy of Pediatrics is sponsoring and supervising projects in two medical centers to de-

termine the best way to extend the teaching, clinical and laboratory facilities of their pediatrics departments into the neighboring territory.

Medical education itself through the years has undergone many changes beginning with the earliest praeceptorships, then the two-year schools which soon had to extend their time of instruction and adopt laboratory and clinical and later research and didactic teaching to keep abreast of the ever-enlarging field of medicine and its kindred sciences. Today the school's obligation to its students no longer ends when degrees are conferred on the graduates but its teaching has to continue through the interne and resident years of preparation as well as postgraduate instruction. It is more recently called upon to extend its facilities systematically to those engaged in private practice in the country surrounding the school. The schools in Illinois, New York, Wisconsin, Minnesota and California and the proposed service by the Long Island College of Medicine are the present outstanding examples of these and similar projects.

When we began this affiliation no one in our department was particularly fitted for this work and my own training in public health was nothing. I had been only a teacher and a private practitioner in pediatrics for upward of thirty years; so that I am afraid often my suggestions were inappropriate and surprising, if not even disappointing to some of the health officers who were trained and often better informed on such matters than I. Nevertheless I have been well received and listened to in every locality but one, and have been invited back to most of them. Many places have been visited twice and several the third time.

I have had to familiarize myself with statistics, particularly those pertaining to morbidity and morality in the children of the counties visited; the activities of the health department in these fields and the services available to those children I would be called upon to see. From all this I have learned a great deal and this, together with the fine reception and cordial cooperation of the health officers and the personnel of the various health departments, has made it a very interesting and pleasant experience for me. Besides this, Dr. Ettledorf and I may have done something for the doctors and the nurses whom we have met and to whom we have spoken.

The Board of Health had furnished me with a list of what I would be called upon to do. The presentation of papers and demonstrations of techniques to physicians; instructions to nurses in different meetings or classes; operation of clinics; pre-school, referred patient, and well baby; surveys of the local health department's child health services; round table discussions with health department staffs; arrangement for lectures by the faculty of the University of Tennessee before groups of doctors; discussion of causes of deaths with health officers and physicians and mailing of reprints and other material to physicians interested in certain subjects. With this background in my thinking and these services outlined I began to prepare myself for the work and agreed to start.

The remaining time will be devoted to a discussion of some of my experiences with an evaluation of the results attained so far and a few recommendations believed to be for the improvement of the children generally. These will be my own opinions for I have discussed them with no one connected with the Board of Health or otherwise; in fact it seems strange, even to me, that I have received no instructions on how to conduct a clinic, examine a baby, make a speech or what to say.

My first obligation seemed to me to be to familiarize myself with the mortality statistics for the various counties I had to visit and also with the incidence of the preventable diseases. While I am no statistician I could recognize that a mortality of 77 per 100 live births among prematures in certain counties which I was to visit when the country-wide rate is around 25 per 100 was exceptionally high. In fact I was immediately struck with three findings, the higher than average premature death rate, the relatively high death rate in the first year of life among full-term babies and the lower than average state-wide death rate for children past the first year of life.

Therefore my first efforts were to stimulate interest in the care of the premature among those responsible for them. Papers were read before medical societies and hospital staff meetings and lectures were given to nurses in the public health service and in the various training schools of the hospitals, these at times with slides or moving pictures, recommendations were made when requested to hospitals regarding space, personnel and equipment.

Talks mentioning these figures before civic groups have led to financial aid and even in one place to the establishment of a premature unit in a county which had none previously. The operation of incubators; electric and non-electric; respirators; resuscitation and the apparatus required have been frequently discussed with individuals or groups interested in these techniques of premature care.

Another observation was the fact that the rank and file of practitioners do not completely immunize at an early age their patients against those conditions in which routine immunizations are generally practiced. I have been surprised to see practitioners assisting in a pre-school clinic send their own patients to a board of health nurse across the hall to receive a vaccination against smallpox. The Board of Health of necessity frequently immunizes later age groups than the private practitioner is able to and one health officer lately told me that the colored population in his county was better immunized against diphtheria than was the white and that in his county deaths from diphtheria were still occurring. Last month in the area meeting of the Academy of Pediatrics in Atlanta it was said that for the last three years no death from diphtheria has been reported in greater New York City.

Clinics of all sorts have been attended. We have paid particular attention to the growth and development, the state of nutrition, and the posture of the children examined as well as the routine checkups for defects. Frequently a nutritionist is sent to the clinic at the same time to assist the mothers in arranging the habits and diets of those cases referred to her.

On many occasions children have had to be referred to the consultant or institution for the crippled or mentally deficient, or those who treat vision or hearing defects or remove tonsils and adenoids. A few have been referred to child guidance clinics. The cardiac clinic in our school has studied the heart cases sent to it. Seven of these were surgical and have been successfully operated on the service of the Baptist Hospital by Dr. Chas. Olim.

Many talks to luncheon clubs, mothers groups, parent-teachers associations and Junior Auxiliary groups have been given. We have been consulted frequently about school buildings, sanitation, lighting, ventilation, and particularly about school lunchrooms, sanitation and menus especially.

Lately we have had to include in our discussions the findings of the Academy of Pediatrics survey in certain counties and to recommend at times certain suggestions for changes believed to be for an improvement in the child health of that locality.

Always we have stressed the importance of an active participation in the infant and pre-school health program, in all its phases.

All in all it has been an interesting and pleasant enterprise and well worth the time and energy spent and I am grateful that I have had opportunity to participate in it. This connection will I trust help to continue the friendly spirit of cooperation between the northern part of your state and our school.

Certain parts of some of the above material were taken from "Bringing Modern Medicine to the People"—The L. I. Col. of Med. Brooklyn N. Y. 1947.

Carcinoma of the Cervix Uteri*

(Guest Editorial)

H. GRADY COOK, M.D.

Hattiesburg, Miss.

CARCINOMA of the cervix in its earliest beginning cannot be recognized except by scrapings or cut biopsies examined microscopically; but usually carcinoma can be discovered, or at least suspected clinically, by ordinary vaginal examination in time for its cure.

A persistent leukorrhea accompanies early carcinoma, at first, little if any, different from that occurring with simple erosions of the cervix; but later becoming more foul smelling as the cancer enlarges and advances.

A small amount of intermenstrual bleeding, especially after intercourse or douching, frequently occurs but not always. Bleeding becomes more profuse and frequent as the growth progresses.

It is only by frequent examinations of normal and abnormal cervixes that one becomes able to suspect an early carcinoma. An erosion or ulceration of the cervix which appears to be deeper than the usual simple erosion and bleeds profusely and more easily when touched with an instrument should be suspected. Too, the cervix deep to the erosion feels definitely harder and more indurated than the non-malignant cervix. To the experienced examiner this induration is almost unmistakable. In later stages one sees a heaping up of dark red friable tissue which rubs off easily and bleeds profusely, covering the inner lining of the cervix and later entirely filling it; until finally there has developed a full-blown cauli-

flower growth involving a large portion or all of the cervix, large pieces of which can be broken off readily with the finger. By this time it is frequently incurable.

The chronic cystic cervix without erosion often becomes malignant. Malignancy is suspected in this type cervix when it is harder than the simple cystic cervix and when on puncture with knife or cautery a caseous, degenerated type of tissue is extruded or found infiltrating the cysts instead of the clear mucous which usually extrudes when ordinary cervical cysts are punctured. However, all cystic cervixes should be biopsied.

Irregular hard nodules may be felt or seen or both in a cervix and also should always be biopsied. They are usually malignant.

Another type of malignant cervix presents an ulcer which appears to be eating into the rim or canal without the piling up of tissue that occurs in the cauliflower type. The ulcer bleeds easily and the cervix around it is indurated.

In summary, leukorrhea and bleeding are the chief symptoms of carcinoma of the cervix. Bleeding may not occur until late. The physical signs are erosion, ulceration, cystic degeneration, nodulation, induration and bleeding on manipulation of the cervix. The final diagnosis, of course, depends on biopsy and this should be done in the case of any cervix which is at all suspicious. I prefer to do this under anaesthesia (pentothal) in a hospital where it can be done adequately and the patient safeguarded against complications of the procedure such as bleeding and infection.

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The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

THE SALT DEPLETION SYNDROME

DR. L. T. CARL

Associate Editor

Low sodium diets have become increasingly popular in the treatment of hypertension and congestive heart failure. Such diets in the past have usually been made up of foods to which no salt had been added during and after cooking. However, it is now possible to determine accurately the sodium content of foods, and in some cases to remove excess sodium from certain foods, so that at present a diet very low in sodium can be prescribed. One now commonly used contains only 0.2 grams of sodium per day. There can be no doubt as to the efficacy of the low sodium diet in the treatment of congestive heart failure, although at the present time its value in the treatment of hypertension appears to be still on trial.

There has also been a re-emphasis on the value of mercurial diuretics. In addition to the long established use in congestive heart failure with edema, recently they have been used, often in conjunction with a low sodium diet, in the treatment of hypertension because of their value as "desalting agents." By their use the body can be rid of considerable amounts of sodium during the period of diuresis. The combination of a low sodium diet plus diuresis following injection of a mercurial diuretic often causes remarkable improvement of the symptoms of congestive heart failure.

However, it is becoming evident from the increasing number of reports of the Syndrome of Salt Depletion in patients treated with a low sodium diet and mercurial diuretics, that these two valuable methods in the treatment of hypertension and congestive heart failure are not without danger and should be carefully controlled.

The mercurial diuretics derive their potent action from the fact that they prevent reabsorption of sodium by the kidney tubules. This unresorbed sodium is excreted and carries with it large amounts of fluid. However, the sodium excretion is relatively greater than the water excretion.

The knowledge that excessive loss of salt and water in patients treated with low sodium diets and mercurial diuretics may lead to the appearance of the Syndrome of Salt Depletion is not new. It has been pointed out that following introduction of mercurial diuretics, the literature contained many papers in regard to the dangers attendant to their use. From time to time, this harmful potentiality is forgotten until again brought to attention by reports of its occurrence. However, even more than in the past, due to the fact that diets so low in sodium are now available and commonly used, and because of the increasing popularity of the mercurial diuretics one can expect to see patients with symptoms due to salt depletion and dehydration.

The symptoms appear as the result of the low intake of salt in the diet and the marked loss of salt following diuresis. Blood sodium chloride falls, and if diuresis is pushed too far, dehydration occurs. This may lead to nitrogen retention in the blood, even to uremic levels. If kidney function is already diminished as is often the case in elderly patients and in hypertensives, the danger of an excessive rise in nitrogenous material in the blood will be en-

hanced. The symptoms encountered in these patients may range from weakness and lassitude, muscle cramps, anorexia, nausea and vomiting, restlessness, extreme thirst to apathy, mental confusion and even stupor or coma. A picture similar to shock, with a fall in blood pressure, a fast pulse rate and even coma may appear. Unfortunately, these symptoms may erroneously be blamed on other causes, and as the result of failure to connect them with salt depletion and/or dehydration, mercurial diuretics and a low salt intake may be continued. As a result a fatal outcome may follow. This failure to appreciate the true cause of the symptoms is usually due to the fact that the patients are seriously ill from the beginning, and thus exhibit a multiplicity of symptoms. Furthermore, symptoms more likely to be blamed on other medications, such as sedation, or digitalis make the picture more confusing. In fact, digitalis intoxication may be caused by diureses, since the digitalis contained in the edema fluid is mobilized by diuresis and may cause symptoms of digitalis overdosage.

The treatment of the Salt Depletion Syndrome is, of course, the addition of salt to the diet, and the giving of sodium chloride and fluids by mouth or parenterally, and the cessation of the use of diuretics. However, the better treatment is its prevention. Low sodium diets and mercurial diuretics are extremely valuable and potent methods of treatment, and their use should be encouraged. But their potency also for harm should not be forgotten. Too drastic diuresis, while ridding the patient of edema and benefitting the symptoms of congestive heart failure, may lead to serious and sometimes fatal complications if not adequately controlled. As a safeguard against development of the Salt Depletion Syndrome, routine checking of the nitrogenous content of the blood and the blood chloride should be done on patients who might be candidates for this Syndrome.

While not related to the Syndrome of Salt Depletion, it is interesting to note that another complication following the use of mercurial diuretics has been recently reported. This is the occurrence of acute retention in elderly men due to the excessive diuresis. The retention has been blamed on some degree of prostatic obstruction, but principally on the fact that due to the rapid production of urine the bladder becomes distended, and as a result loses its usual propulsive power. Of the

cases reported some were relieved by catheterization, but others required cystotomy. When using mercurial diuretics in elderly men, the possibility of this complication should be kept in mind and small trial doses of a mercurial diuretic should be given until the adequacy of the urinary tract to expel an unusual amount of urine is proven. Otherwise, most uncomfortable and possibly serious degrees of urinary retention may occur.

DISCRIMINATION IN ANTIBIOTIC THERAPY

By DOUGLAS D. BAUGH, M.D., F.A.C.P.

Columbus, Mississippi

Associate Editor

One is continually impressed with the tremendous amount of antibiotics used in present day medical practice. New products, and more potent variations of older products are appearing frequently and with great promise.

This is well and good; however, we often speculate as to what percentage is judiciously administered, as contrasted to the percentage used more or less indiscriminately for minor illnesses.

The widespread publicity, with often exaggerated claims, given these products in the lay press creates great public pressure on physicians to employ the newer antibiotics before their true role is established. One suspects also an element of medical faddism as a factor in the volume used.

The indications for their use in severe and potentially severe infections are fairly well established. Their restriction to this field of use is important for more than one reason. Failure to respond to treatment may be the least objectionable feature; actual harm to the patient may result.

In addition to the most of the drugs, which may be almost prohibitive, other reasons for more discrimination in the use of them stand out.

The first reason is that one's acquired immunity against some infections is built up by repeated exposure to the particular infection. If the infection is quickly killed by antibiotics before some degree of immune reaction is developed, the patient is still just as vulnerable and may require more drug at each reappearance of similar mild infections indefinitely.

One of the exceptions is the common cold, where immunity is brief following an attack;

but in most of the colds and other upper respiratory infections antibiotics are of little therapeutic value anyway. Of course the progression of some mild infections into severe infections may be prevented by the more or less blanket use of antibiotics, but this method of medical practice has its disadvantages.

There are also the problems of tolerance development and unfavorable drug reactions—often severe ones. It is well known that after repeated administration of the drug, a tolerance often develops, rendering it of little value or totally ineffective. Its use in subsequent severe infections, where it would be badly needed, would then be of limited value.

Every physician has observed severe reactions to these drugs that preclude any further use of the drug in that patient. In case of subsequent dangerous infections the patient is denied the use of a potent remedy, and the physician is relatively disarmed.

The percentage of these disadvantages would be materially reduced if the use of antibiotics were restricted to their particular field in severe and potentially severe infections. More discrimination seems to be in order.

The program for the Mid-South in Memphis in February is outstanding. February is the month, the Peabody Hotel is the place. Make your reservation now.

The Southern Medical Association meets in Cincinnati November 14-17. The indications are that it will be one of the best. The cordial and scholarly Dr. Oscar B. Hunter is the president this year.

The State Hospital Association at the Buena Vista Hotel, Biloxi, October 20 and 21, with John W. Gill of Vicksburg as president, presented quite a good program. The general theme of the program was "Toward improving the service in our small Mississippi Hospitals." The program was largely in panel discussion form. The real highlight of the program was Professor James P. Hamilton from the University of Minnesota, Minneapolis. He knows his way around in hospitals. Even the small hospital man could see gumption in what he had to say every time he spoke. A small hospital especially is just as good as the doctors behind it and this does not mean that a hospital administrator is not of the greatest importance.

The Delta Medical Society meeting at Sunflower on October 12 was very fine. It was good to be there. Dr. C. W. Patterson was president with the able Dr. Frank Acree as secretary. Dr. L. H. McDaniel of Tyronza, Ark., was the guest speaker, his subject, "The Doctor's Soul Points the Way," touching the hearts of his hearers.

The Fifty-Year certificate was delivered to Dr. L. L. Minor at the Minor Memorial Church at his home Sunday, October 23. It was one of the very best. In the next issue will be a fuller report of this meeting, also some low-down on this young 88-year-old. Dr. Schudder attended the Confederate Veterans reunion as the oldest son and was mighty spry at the Delta meeting also.

News and Comment

MISSISSIPPIAN HEADS ALASKAN SERVICE



Director of the first Alaskan postgraduate course for doctors was Dr. James T. Googe, a native of Prentiss County, Miss., medical director of the Alaska Naval Service. Dr. Googe was formerly director of public health in Lauderdale County, Miss. The two-week refresher clinic, which was sponsored by the American Medical Association, U. S. Air Force, and Alaska Native Service, Department of the Interior, was attended by medical officers of the Air Force and Army, personnel of the Alaska Department of Health, and Alaska Native Service doctors. Seven top-ranking medical specialists selected by the American Medical Association lectured at the meetings.

Requirements for Alaskan doctors in government service include: a degree from an ac-

credited medical school, three years' medical practice, and United States citizenship. Annual salaries are approximately \$7,200, and government housing is provided at nominal cost. Doctors or nurses interested in serving in Alaska are asked to write to the Alaska Native Service, Juneau, Alaska.

S. M. A. PRESIDENT



DR. OSCAR B. HUNTER

Meeting in Cincinnati, Nov. 14-17.

DOES RESEARCH WITH SNAKE VENOM

An interesting article, "Influence of Snake Venom on Mammalian Erythrocytes in Vitro" was published in the American Journal of Physiology, July, 1949, issue. This is an original article written by V. B. Philpot, Jr., a senior student in the School of Medicine, Tulane University of Louisiana. Most of the work for the paper was done during off hours in his junior year.

His work was mainly experiments with water moccasin, copperhead, and rattlesnake venoms, which bring about agglutination and subsequent hemolysis of washed human erythrocytes. His experiments also included dog, sheep and rabbit serum.

Pursuing these studies, the young scientist is experimenting with king snake serum in the treatment of bites from poisonous snakes.

Young Philpot's father is surgeon in charge at the North Mississippi Hospital, Holly Springs, Miss.

Young Doctor—Native Mississippian, married, will complete training June, 1950. Would like to enter practice in small Mississippi town. Interested in General Practice with associated Surgery. Jim C. Barnett, Jr., M.D., 4349 Illinois, San Diego, California.

With the Fifty Year Club

Remarks of Dr. Felix J. Underwood on the Occasion of the presentation by him of a Fifty-Year Certificate of Membership in the Fifty Year Club of the Mississippi State Medical Association, Robert E. Lee Hotel, Jackson, Mississippi, on Tuesday evening, September 6, 1949

Forty-one years ago I first met Dr. Dudley Jones, and I have enjoyed his friendship from the occasion of our first meeting. Forty-one years have passed swiftly, and I scarcely realize that it has been almost half a century since we became friends. I suppose one reason for the swift passage of time is that both of us have been quite busy in the service of our fellowman and our beloved medical profession.

Doctor Jones was born in Claiborne County, Mississippi, July 10, 1870. His preliminary education was obtained at Hazlehurst. He graduated from the Hazlehurst High School and then from the University of Mississippi in 1894. He taught school for two years and served one term as superintendent of education of Copiah County. His medical education was obtained at the University of Tennessee, Nashville, and Tulane University, New Orleans, Louisiana, receiving his M.D. degree from Tulane University School of Medicine, May, 1900. Doctor Jones passed his examination and was granted a permanent license to

practice medicine in Mississippi, May 12, 1899, one year before his graduation. He has been a licensed practitioner of medicine and busily engaged in practice 50 years as of May 12, 1949.

Doctor Jones practiced at Hermanville, Claiborne County, 1900-1904, at Fernwood, Pike County, 1904-1909, at Brookhaven, Lincoln County, 1909-1916, and has practiced in Jackson, Hinds County, since 1918. He was Chief Sanitation Officer for the Mississippi State Board of Health for the years 1916-1917.

While he was located at Brookhaven, he organized the Tri-County Medical Society and was its first president. He became president of the State Medical Association in 1910 and presided over the annual session at Oxford, Mississippi. He was councilor, Southern Medical Association for many years, and was a member of the Council of the Mississippi State Medical Association for ten years and served as its secretary for five years. He is and has always been a member of the American Medical Association. He proposed and promulgated the organization of the ex-presidents' club, Mississippi State Medical Association, and has been its secretary ever since.

Doctor Jones did postgraduate work at Chicago Polyclinic in 1901 and again in 1902. He did postgraduate work in New York in 1904 and again in 1918 and in New Orleans in 1900 and again in 1904.

He is still active in the practice of medicine and in the service of his local and State Medical Association. No one ever had a more loyal friend than Dudley Jones. May he have many more years of health, happiness and usefulness to his family, his clientele, his medical organization, and his host of friends.

Doctor Jones is a modest man. He wished to have his certificate and pin given to him without ceremony, but after talking with Dr. W. H. Anderson, Dr. J. P. Wall, Dr. Harvey Garrison, Dr. H. C. Ricks, and other friends, it was decided he should and must be honored on a public occasion even though it be against his wishes.

Doctor Jones, on behalf of the Fifty-Year Club, the State Medical Association, and the Central Medical Society, it is my privilege and honor to present you with this beautiful certificate of membership in the Fifty-Year Club duly framed for hanging on the walls of your office or home as you wish, and this fifty-year pin which I now pin on the lapel of your coat with loving hands and tender heart.

RUSSIA'S HEALTH

Medical standards in Russia today are poorer than before the 1917 Bolshevik Revolution. That is the admission of Soviet Vice-Commissar Vasili Parrin who added apologetically that "Where only five per cent of the people enjoyed good medicine before, now one hundred per cent get some kind of medicine."

The state of Russian health today, according to international Red Cross estimates, is very poor. Twenty-million civilians died of starvation and its related effects in World War II.

Unquestionably millions of other deaths were hastened by lack of food, and the effect will be felt for a generation in tuberculosis, bad teeth, faulty bone structure, cardiac ailments and digestive troubles.

AMERICAN COLLEGE OF SURGEONS

A two-day Sectional Meeting of the American College of Surgeons is to be held at the Belleview-Biltmore Hotel, Belleair, Florida, on January 9 and 10. The section consists of the states of Virginia, North Carolina, South Carolina, Georgia, Mississippi, Alabama, and Florida. This meeting will consist of all day and evening conferences on timely surgical subjects and separate meetings for hospital personnel where hospital problems will be considered at panels and round-table discussions.

The surgical program will include some new surgical motion picture films, papers and panels on such subjects as: arterial lesions of the extremities, hormone therapy in breast lesions, intestinal obstruction, gastric and intestinal intubation, treatment of head injuries, surgery of the hand, surgical lesions of the stomach, caesarean section, management of uterine prolapse, the management of traumatic conditions, and a symposium on cancer.

ANNOUNCEMENTS

Hoye's Sanitarium, Meridian, Mississippi, announces that selected narcotic cases will be admitted. Write P. O. Box 106, Phone 3-3369, Meridian, Mississippi.

James Henry Ferguson, M.D., announces the opening of his office for practice of obstetrics and gynecology, 1515 Aline Street, New Orleans, Louisiana.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson

Otolaryngology—Charles R. Hume

Ophthalmology—Edley Jones, Vicksburg

Obstetrics and Gynecology—J. F. Lucas,

Greenwood.

Orthopedics—Thomas H. Blake, Jackson.

Public Health—Felix J. Underwood, Jackson.

Pediatrics—Harvey F. Garrison, Jackson.

Radiology and Roentgenology—Karl O. Stin-
gily, Meridian.

Pathology—R. M. Moore, Vicksburg, Miss

Surgery—W. H. Parsons, Vicksburg.

Urology—Temple Ainsworth, Jackson.

PEDIATRICS

THE TREATMENT OF ROCKY MOUNTAIN SPOT-
TED FEVER WITH CHLOROMYCETIN—Maurice C.
Pincoffs, Ernest G. Guy, Leonard M. Lister,
Theodore E. Woodward, Baltimore, Mr. and
Joseph E. Smadel, Washington, D. C., *Ann.*
Int. Med. 29:256:63, October 1948.

"Ten of the 15 reported patients were under
16 years of age (2 to 16) and 5 were 17 to
67. The chloromycetin was given usually at
three hour intervals. The arbitrary doses em-
ployed were 0.25 Gm. every three hours for
the children under age 16 years and 0.5 Gm.
for those above this age. The chloromycetin
was discontinued after twenty-four of normal

temperature. Improvement in symptoms was
uniformly noted within twenty-four hours
after beginning treatment. The eruption usual-
ly subsided markedly by forty-eight hours. On
the third day the patient was usually free of
symptoms and clearly convalescent. In oc-
casional instances there was some vomiting on
the first or second day; there were no other
toxic symptoms. Chloromycetin may therefore
be deemed an effective therapeutic agent in
this disease."

COMMENT: It is very encouraging to note
the great advances made in both the pre-
vention and treatment of many diseases at
the present time. The treatment of Rocky
Mountain spotted fever now by chloromycetin
is undoubtedly one of the outstanding advance-
ments in modern medicine. Chloromycetin is
essentially specific for not only Rocky Moun-
tain fever but particularly for typhoid fever
as well. It was our privilege to have a case
of typhoid fever in a 22 month old baby about
3 months ago in which we gave chloromycetin.
The child was desperately ill at the time we
began the drug, having a temperature of 104
to 105, very toxic, and after we had secured
a positive typhoid reaction from the blood,
urine, and feces, we immediately began the
chloromycetin. After 3½ days, the baby's
temperature was normal, and it has remained
entirely well ever since.

MEMORIAL LECTURE

The Mark J. Schoenberg Memorial Lecture
will be held at the New York Academy of
Medicine at 8:30 P.M., Monday, December 5,
under the joint sponsorship of the New York
Society for Clinical Ophthalmology and the
National Society for the Prevention of Blind-
ness. Jonas S. Friedenwald, M.D., of Balti-
more, Md., will discuss "Some Problems in the
Diagnosis and Treatment of Glaucoma."

State Board of Health

Felix J. Underwood, M.D.

MORTALITY EXPERIENCE AMONG MISSISSIPPI PHYSICIANS

SARA E. SHANKS,
Statistician

and

MARGARET E. RICE,
Supervisor Statistical Service

Forty Mississippi physicians died during 1948. As of July 1, 1948, there were 1,408 physicians in the state. The death rate of 28.4 per 1,000 Mississippi physicians was more than three times the 1948 death rate of 8.6 for the general population. This study was made to determine whether or not this difference was real or might be accounted for by the distribution of the two groups as to age, race and sex.

Approximately 95 per cent of the physicians are white males; therefore, the comparison has been restricted to this race and sex and to the ages 25 and over. For comparing rates, the distribution of the general population for Mississippi by sex and age as given in the 1940 census has been used.

Residence data have been used except for deaths in the white male population during 1944. Data by age on a residence basis were not available this year.

Death Rates

The annual death rate for 1948 for the white male physicians 25 years of age and over

was 28.1 per 1,000 physicians (Table 1). Considered by age groups, the rate advanced from 5.3 per 1,000 at ages 25-34 to 13.9 at ages 45-54 to 58.3 at ages 65 and over. No deaths of physicians at ages 35-44 occurred.

In the general white male population the death rate was 15.8 per 1,000 estimated population over 25 years ago, and the age specific rates advanced from 2.4 at ages 25-34 to 9.5 at ages 45-54, to 82.4 at ages 65 and over (Table 1). In all groups under 65 years of age, except 35-44, where there were no deaths of white male physicians, the white males in the general population had the advantage. At ages 55-64, the physicians had a higher rate by 12.4.

Among the white male physicians, 25 years and over, 67.6 per cent of the deaths occurred at ages 65 years and over. The average age at death was approximately 69 years. For the total white male population, 57.6 per cent of the deaths were at ages 65 and over with the average age at death approximately 65 years.

The age distributions of the two groups were entirely different (Table 2). A higher percentage of the physicians (33 per cent) as of July 1, 1948 was in the age groups over 65 years of age than white males in the general population (11 per cent). If the age distributions of the total white male population and of the white male physician were equal, the adjusted death rate among the total white male population would be 33.6 per 1,000; a higher

Table 1. Age Specific Death Rates, 1948, White Male Physicians Compared with the Total White Male Population 25 years of age and over.

Age Group	White Male Physicians		Total White Male Population	
	Number	Death Rate	Death Rate	Adjusted
		per 1,000	per 1,000	Death Rate*
25-34 years	188	5.3	2.4	
35-44 years	298	—	4.0	
45-54 years	144	13.9	9.5	
55-64 years	257	35.0	22.6	
65 years and over	429	58.3	82.4	
Total (25 yrs. and over)	1,316	28.1	15.8	33.6

* Adjusted for age on basis of age distribution of physicians.

Table 2. Percentage Distribution by Age of the White Male Physicians and the Total White Male Population 25 years of age and over.

Age	White Male Physicians	Total White Male Population
25-34 years	14.3	31.5
35-44 years	22.6	24.3
45-54 years	10.9	19.4
55-64 years	19.5	13.7
65 years and over	32.6	11.1

rate than was found among the white male physicians (28.1).

Inaccuracies in estimating population may account for some of this difference. There is evidence, however, that the death rate for physicians in 1948 was significantly less than that for the white males in the general population adjusted for age distribution. It appears, therefore, that the mortality among physicians is high because they are a relatively older population and not because of any particular mortality risks associated with their profession.

Causes of Death

For a comparison of the individual cases of death among the two groups, the total deaths for the five-year period 1944-1948 were used. No population data by age were available for the physicians over this period; therefore, proportionate mortality as to cause of death was the basis for the comparison.

Although the leading causes of death among the male physicians were not greatly different from those among the white males in the gen-

eral population, there is some variation as to the relative importance of these causes among the two groups. The twelve leading causes of death shown in table 3 comprised 89 per cent of the deaths of physicians and 82 per cent of the deaths of the total white male population.

First on the list for physicians are diseases of the heart which accounted for 43.4 per cent of the deaths; second, cancer, 9.7 per cent; followed by intracranial lesions of vascular origin with 9.2 per cent; nephritis, 8.7 per cent; accidental deaths, 4.6 per cent; and pneumonia and influenza, 3.1 per cent. These six causes ranked in the same order for the total white male population and accounted for approximately three-fourths of the total deaths among both groups—79 per cent among the physicians and 74 per cent among the white males.

In the total white male population, heart diseases caused only 32.5 per cent of the total deaths while these conditions caused 43.4 per cent of the deaths among the physicians. The unequal age distribution of the two groups

Table 3. Leading Causes of Death Among White Male Physicians at Ages 25 and Over—1944-1948, as Compared with White Males in General Population.

Cause of Death	White Male Physicians		Total White Male Population	
	No. Deaths	Per Cent	No. Deaths	Per Cent
All causes	196	100.0	21,482	100.0
Heart diseases (90-95)	85	43.4	6,981	32.5
Cancer (45-55)	19	9.7	2,339	10.9
Intracranial lesions (83)	18	9.2	2,244	10.4
Nephritis (130-132)	17	8.7	1,930	9.0
Accidental deaths (169-195)	9	4.6	1,569	7.3
Pneumonia & influenza (107-109 & 33)	6	3.1	860	4.0
Diabetes (61)	5	2.6	367	1.7
Tuberculosis (13-22)	4	2.0	688	3.2
Arteriosclerosis (99)	4	2.0	38	0.2
Suicide (163-164)	4	2.0	349	1.6
Cirrhosis of liver (124)	2	1.0	198	0.9
Leukemia (74)	2	1.0	89	0.4

may account in some measure for this difference. The proportionate mortality for the next five leading causes was approximately the same.

Summary

The mortality experience among Mississippi physicians compares very favorably with that of the white male population in general when the unequal age distributions are considered. During 1948, the death rate for the white male physicians 25 years of age and over (28.1) was less than the adjusted rate for the white males in the general population (33.6). The white males in the general population had the advantage in the age groups under 65 years of age.

The average age at death for the physicians was 69 years compared with 65 years for the white males in the general population.

The six leading causes of death (heart disease, cancer, intracranial lesions, nephritis, accidental deaths, pneumonia and influenza) were the same for the physicians and the total white male population during the 5-year period, 1944-1948. These causes accounted for approximately seventy-five per cent of the deaths among both groups.

Heart disease accounted for 43.4 per cent of the deaths among physicians as compared with 32.5 among the white male general population. The proportionate mortality for the next five leading causes was approximately the same.

REFERENCES

1. Mississippi State Board of Health—*Annual Reports of Vital Statistics*, 1944-1948.
2. Tabulation of Mississippi Physicians by Age, July 1, 1948.
3. Annual Lists of Deceased Mississippi Physicians, showing age and cause, 1944-1948.

COUNCIL ON INDUSTRIAL HEALTH

The Council on Industrial Health will hold its tenth annual Congress on Industrial Health at the Roosevelt Hotel in New York City, February 20 and 21.

Woman's Auxiliary

OFFICERS

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AUXILIARY HONORS STATE PRESIDENT

The Coast Counties Medical Auxiliaries held their annual luncheon at Broadwater Beach October 20 to honor Mrs. Augustus Street, state president.

A large representative body from auxiliaries of Biloxi, Gulfport, Ocean Springs, Pascagoula and Pass Christian heard Mrs. Street give her greetings and her report of the National American Medical Association which recently met in Atlantic City. At this convention the medical leaders were in unanimous accord that the United States could not follow in the tragedy of those countries adopting socialized medicine.

All auxiliaries were urged by Mrs. Street to give to the public the true facts concerning the shortcomings of socialized medicine as compared with a system permitting the doctor to advance in all the medical fields, to eradicate disease, to alleviate suffering to all man-

kind without being hampered by political strings.

Mrs. William Joseph, president of the Gulfport unit, presided. Mrs. Cummings McCall was in charge of flower arrangements. Mrs. Elizabeth Wates of Jackson, state commander of Mississippi Division American Cancer Society, was a guest.

CENTRAL MEDICAL AUXILIARY

On Tuesday, October 4, 1949, the Central Medical Auxiliary held its first meeting of the season. Mrs. I. C. Huggins, president, introduced the new officers and committee chairmen.

A recommendation was approved to provide a book and magazine cart for the patients at Charity Hospital, the books and magazines to be donated by the auxiliary members.

Mrs. August Street, president of the State Auxiliary, gave an interesting and informative talk on the dangers of compulsory health insurance and the advantages of voluntary health insurance.

After the program, tea was served in the dining room, beautifully decorated with yellow chrysanthemums and asters.

Members present: Mrs. P. R. Greaves, Mrs. A. E. Gordin, Mrs. George Riley, Mrs. Byron Alexander, Mrs. Van Dyke Hagaman, Mrs. Brister Ware, Mrs. W. L. Hughes, Mrs. J. E. McDill, Mrs. S. K. Johnson, Mrs. E. A. Cope-land, Mrs. Victor Watson, Mrs. Jim Hendricks, Mrs. Frederick Hamilton, Mrs. R. H. McArthur, Mrs. Edwin Werkheiser, Mrs. R. W. Crowell, Mrs. A. W. St. Clair, Mrs. Curtis Caine, Mrs. Norman Burnstein, Mrs. Robert Seawright, Mrs. O. P. Myers, Mrs. R. C. O'Ferral, Mrs. Edna Wilde, Mrs. E. R. Grenfell, Mrs. Claude Callender, Mrs. George Harvey, Jr., Mrs. L. T. Carl, Mrs. O. A. Schmid, Mrs. E. D. Reynolds, Mrs. Cy Johnson, Mrs. Charles Ward, Mrs. Thomas Blake, Mrs. Temple Ainsworth, Mrs. Lloyd Deddens, Mrs. Robin Harris, Mrs. Harvey Johnston Jr.; Mrs. A. J. McIlwain, Mrs. Wildridge C. Thompson, Mrs. T. E. Wilson, Mrs. Leonard Bible, Mrs. William C. Quinn, Mrs. Charles Neill, Mrs. Rush Netterville, Mrs. William Weiner, Jr., Mrs. H. C. Ricks, Jr., Mrs. Willard Waldron, Mrs. James A. Chutz, Mrs. W. F. Hand, Mrs. George Twente, Mrs. Tom Safley, Mrs. H. C. Sheffield, Mrs. Ford Williams, Mrs. F. D. Hollowell, Mrs. Ross Bass, Mrs. John W. Long, Mrs. Temple Moore, Mrs. George Owen, Mrs. John B. Howell,

Mrs. T. W. Kemmerer, Mrs. J. P. Melvin, Jr., Mrs. I. C. Huggins, Mrs. Raymond Grenfell, Mrs. E. R. Grenfell, and Mrs. Frank Donaldson.

DELTA MEDICAL AUXILIARY

Mrs. Gus Street of Vicksburg addressed members of the Auxiliary to the Delta Medical Society at their semi-annual meeting October 11 in Sunflower.

Mrs. Street brought to the attention of members one of the real issues of the nation in 1950, that of a national health program. Some kind of health program will be passed in 1950, Mrs. Street believes, and she reminded members that "the American Medical Association has a health plan, and the medical auxiliary has a big job ahead in educating the public on this plan." She briefly outlined the twelve points in the A. M. A. Health Plan, pointing out where the average American will receive more benefits from this plan, rather than the one being debated in congress today.

Mrs. John Williams, president of the auxiliary, presided at the meeting. Mrs. W. H. Anderson, of Booneville, state president-elect, spoke briefly for a four-year medical school in Mississippi where our medical students can train without leaving the state. She urged members to contact legislators from this section to support the establishment of the school.

Officers elected for the coming year were: President, Mrs. J. C. Soares, of Greenville; sec'y-treas.; Mrs. W. S. Witte, Leland; vice-president, Mrs. J. A. Clark, Jr., Ruleville; secretary-treasurer, Mrs. W. S. Witte; vice-presidents: Sunflower County, Mrs. B. H. Higden, Washington, Mrs. Jack Wilson, Leflore, Mrs. J. C. Pegues; Bolivar, Mrs. H. E. Day, and Humphreys, Mrs. Dewitt James.

EXECUTIVE BOARD MEETING

Mrs. Augustus Street, Vicksburg, president of the Woman's Auxiliary to the Mississippi Medical Association, was hostess Tuesday, October 11, to the members of the state executive board and presidents of the local medical auxiliaries.

Mrs. J. K. Avent, immediate past president, reported on her work as chairman of the Health section of the Mississippi Women's Committee on Public Affairs and stated she had been appointed acting chairman of the committee called by Senator Mitchell Robinson

for the promotion of a four-year medical school to be located in Jackson. Mrs. Avent urged that the local units push this promotion and public interest in the establishing of such an institution.

Mrs. Street urged that the local auxiliaries work out programs of procedures in their communities to acquaint the laity in their respective communities of the advantages of voluntary health insurance as opposed to the dangers of socialized compulsory health insurance.

State officers who were guests in Mrs. Street's lovely home included Mrs. Stanley Hill, Corinth; Mrs. J. K. Stowers, Natchez; Mrs. Richard Clark and Mrs. P. E. Smith, Hattiesburg; Mrs. Jno. B. Howell, Jr., Canton; Mrs. W. H. Anderson, Booneville; Mrs. John Williams, Greenville; Mrs. Wm. K. Slaughter and Mrs. J. T. Bryan, Meridian; Mrs. J. K. Avent, Grenada; Mrs. I. C. Huggins, Mrs. W. L. Waldron, and Mrs. T. A. Baines, Jackson; Mrs. L. J. Clark, Mrs. Thomas Dominic, and Mrs. James A. Keily, Vicksburg.

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The Frontal Sinus—A Problem in Diagnosis and Treatment*

LYLE M. SELLERS, M.D., F.A.C.S.

Dallas, Texas

NO STRUCTURE lying entirely within the realm of the otolaryngologist puts to a greater test his diagnostic acumen, his medical skill and his surgical craftsmanship than does the frontal sinus. Truly it would seem that this sinus formed after all the other sinuses had been planned and developed was an after-thought in the master plan. It is nothing more and it is nothing less than an ethmoid cell with wanderlust sufficient to cause it to invade the neighboring frontal bone and with nostalgia enough to keep it forever connected with the point of its origin by the long nasofrontal duct.

Its wanderlust may be enough only to produce the smallest bud of a sinus or it may be great enough to cause it to form a huge sinus with extension upward and outward between the inner and outer tables of the frontal plate of the frontal bone and extension backward between the floor of the anterior cranial fossa and the roof of the orbit. Within and between these limits of size and distribution caprice may develop finger-like processes or partially sealed pockets.

As if this were not enough one frontal sinus may be content to remain very small and close to home while the mate invades its rightful territory, over-riding and almost completely replacing it. This characteristic it shares with the sphenoid sinus.

In one respect however the frontal sinus stands unique. It is the only sinus to be entered and to drain by way of a duct. This duct may be fairly straight and wide or it may be very long, tortuous and narrow and encroached upon and displaced by overgrown or misplaced ethmoid cells which may be so misplaced as to cross the midline anterior to the crista galli and come to rest by encroaching upon the cavity of the frontal sinus on the opposite side.

These anatomical arrangements alone account for much of the misunderstanding and difficulty connected with this sinus. But cer-

tain other factors conspire to add to the difficulty.

The Diagnostic Problem

We will assume in our discussion that allergy will have been eliminated by proper diagnosis and that the problems which we face are those of inflammation and infection.

For long years we have been taught that supraorbital headache and pain associated with sinus infection are (except in unusual cases) due to involvement of the frontal sinus. Nothing could be farther from the truth. It has been our experience from careful observation that supraorbital pain and headache is caused by involvement of the maxillary sinus far more frequently than by involvement of the frontal sinus. McAuliffe, Goodell and Wolff¹ have shown that irritation of the antrum will refer pain to the supraorbita as will irritation of the region of the ethmoid cells and nasal mucosa near the osteum of the antrum.

Only when the pain has the characteristic periodicity of the frontal sinus headache (onset shortly after rising in the morning with spontaneous relief within a few hours) may any reliance be placed on pain as a diagnostic help. And then it must be accompanied by further confirmatory data. Furthermore a sinus large enough to extend to the opposite side may produce pain extending beyond and possibly limited to the opposite side.

Tenderness however is quite dependable. Pressure on Ewing's point against the thin floor of the sinus at the upper and inner angle of the orbit usually will elicit exquisite tenderness if the frontal sinus is involved actively. Tenderness to percussion over the brow is also very characteristic and quite dependable. Tenderness however is subject to the same modification as is pain by extension of the affected sinus beyond the mid-line.

Edema is quite undependable especially if the orbital tissues are involved. This is quite easily understood when the texture of these and the neighboring soft tissues is considered.

Transillumination is notoriously fallible. Only when the patient has been seen previously with the sinus in question showing good transmission of light may opacity by transillumination be accepted with any degree of certitude.

* Read before the Section on Eye, Ear, Nose, and Throat at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949.

X-ray (in contradistinction to transillumination) is a reliable diagnostic aid. But it too will lead occasionally to error or uncertainty.

Purulent nasal drainage when traced to the anterior portion of the middle meatus may aid us in indicting the frontal sinus, but only when other factors agree with its significance.

The Problem of Treatment

Acute Frontal Sinusitis

Having established the diagnosis of acute frontal sinusitis, the following three problems confront us.

1. To cure the present attack without complications.
2. To restore the sinus to its normal condition.
3. To prevent future recurrences.

Here we are dealing with a disease that may develop very serious complications so at the outset we start to combat the infection by the use of both chemotherapy and antibiotics without waiting for a report on either smear or culture unless of course a history of sensitization to either or both is present. Even then it may be advisable to proceed with their use accompanying them with one of the antihistaminic drugs.

Re-establishing drainage by reopening of the duct and control of pain are our next considerations. These are best accomplished by first shrinking and lightly anesthetizing the nasal mucosa with a spray such as 0.5 per cent solution of cocaine hydrochloride in 0.25 per cent neosynephrin solution. (The patient is given this spray for home use also). Then by gently placing pledgets of cotton soaked in 0.5 per cent pontocaine in 0.25 per cent neosynephrin solution under the middle turbinate, carrying them high to the region of the opening of the naso-frontal duct. The use of the local anesthesia here is understood when we remember that the seat of pain in the sinus is in and about the duct. We have found heat, especially infra-red, to be a valuable adjunct at this time.

Between local treatments sedation is most needed and is produced best by codeine, aspirin and acetphenetidin.

Postural drainage is of prime importance. The patient should lie and sleep with the head elevated on two or three pillows. This position not only assists drainage; it also helps to avoid the typical headache whose onset is after arising in the morning. This

headache we feel is truly a vacuum headache. It can be explained on no other rational basis.

As long as the patient remains recumbent the secretions accumulating within the frontal sinus slowly drain away as an overflow. When the patient arises the secretions settle to the lowest point, that is into the lower portion of the sinus proper, the infundibulum and the naso frontal duct. These secretions in attempting to drain away then duplicate the phenomenon we see when we invert a well filled catsup bottle. The catsup is held within the bottle by the partial vacuum created over the level of the catsup. Only when a small bubble of air works its way upward through the neck of the bottle is the vacuum displaced and the catsup allowed to start its flow. If this flow is maintained the vacuum will not form.

If however only a small quantity of catsup is in the bottle when it is inverted the inversion will not produce the vacuum effect as enough air will be trapped over the level of the catsup to permit its initial flow. The same effect obtains when the frontal sinus contains only a small amount of secretion.

That a vacuum does produce pain in an inflamed sinus we feel can be proved readily in the case of the maxillary sinus. It is not uncommon for us to relieve the pain in an acutely inflamed and blocked maxillary sinus when we insert the spinal needle which we use in lavage of this sinus via the inferior meatus. As the stylet is withdrawn many times there is an inrush of air with immediate relief of the pain. The pain then may be reproduced by attaching a syringe to the needle and withdrawing the plunger. Even when there has been no initial negative pressure pain, such pain may be produced by creating a vacuum in a blocked sinus by the same means.

Should such conservative methods of treatment fail and surgical drainage become necessary, this should be done by the external route. If we wish the sinus to return to normal we will embark upon no instrumentation of the duct such as probing or the introduction of sounds at this time unless we are sure that the duct is wide, straight and comparatively short. If this is true such instrumentation will scarcely be needed. If it is not true then almost surely we will produce severe and lasting injury to its mucosa with consequent narrowing or stricture.

A small incision is made through the inner angle of the brow with elevation of the tissues from the roof of the orbit. A small trephine

opening then is made through the thin bone of the floor of the sinus through which a smaller catheter for drainage is inserted into the cavity of the sinus. The catheter is stitched to the inner end of the incision for retention and the wound otherwise closed. Irrigation and instillation of penicillin via the catheter will soon lead to resolution with restoration of a patient and normal duct.

When the patient has recovered fully any predisposing causes should be corrected.

Subacute Frontal Sinusitis

In this condition the patient has a more or less constant "sinus condition" characterized by recurrent typical attacks of true frontal sinusitis. In seeking the remedy for this rather distressing ailment let us bear in mind the maxillary sinus as the sinus basically at fault. In the older days when the frontal, the ethmoid and the maxillary sinuses were involved surgery began with the frontal sinus on the ground that it was the seat of the infection and that pus drained by gravity down the nasofrontal duct from the frontal sinus to the hiatus semilunaris and thence into the antrum, infecting the ethmoids in its downward course. This probably accounted for the dictum that one sinus operation leads to another as operating on only the frontal sinus did not relieve the condition. Today all evidence points to a reverse course. The antrum is most frequently the primary seat of the infection. Pus thrown from the antrum into the hiatus is drawn upward probably by capillary attraction to infect the frontal sinus and as long as the supuration remains in the antrum the frontal and the ethmoids will suffer their recurrent attacks. It is our custom, and results seem to justify our course, in such to correct only the antrum infection unless there is evident cause for immediate interference with the frontal sinus. In a large percentage of cases the frontal sinus will cease to be a source of further trouble.

Of course drainage from the naso-frontal duct should be helped by removing causes predisposing to its blocking. Submucous resection should the septum be a factor, and infraction or crushing of the anterior portion of the middle turbinate are the means most frequently employed here.

Chronic Frontal Sinusitis

Once the conclusion is reached that surgical interference is necessary we must face the fact

that we have only one of but two alternate choices as our next step. First we may attempt restoration of the sinus as a functioning entity with an anatomically open and physiologically functioning duct. This course we have found to be successful only rarely and we do feel that it is now the prime cause of failure of frontal sinus surgery.

Our only alternative then is complete obliteration of the sinus and its duct both as anatomical and physiological entities.

The surgical procedure of choice in our hands is the Lynch operation performed under local anesthesia with two cooperating surgeons at work in the field, one working externally and the other intranasally exchanging places as the work of the moment demands.

The technical features of this procedure we carry out as follows:

The usual brow incision is made and unless involvement of the frontal plate is evident no elevation of the soft tissues above the line of incision is attempted. The tissues are elevated from the entire roof and the entire medial wall of the orbit ligating and sectioning the ethmoid arteries. The pulley is elevated with these tissues. The sinus is entered at the anterior medial portion of its floor and the entire floor of the sinus is removed. Then every vestige of lining membrane must be removed from every portion of the sinus with the aid of small post-nasal mirrors to supply direct vision and with the use of small flexible curets. Small pledgets of gauze held in a curved forceps and used with a scrubbing action are used to complete this removal. We have never found a sinus no matter how high its upward extension and no matter how narrow its anterior-posterior dimension that this was not possible. Only by complete removal of all epithelium may we be assured that the sinus will be obliterated by firm fibrous scar tissue.

All ethmoid cells (at least all in the anterior group) are then removed until the smooth unbroken bony surface of the floor of the anterior fossa of the cranium is visualized. We do not hesitate to remove the lamina papyracea in this process.

The duct then is obliterated totally with burrs and with rongeurs and every bit of its lining membrane is removed. Our final effort in this procedure is to introduce a large strip of gauze from above and to draw it down into the nose and out the external naris. By holding its two ends in our hands we use it to scrub the bone and soft tissues with a vigorous

back and forth sawing motion. By now the frontal sinus, the ethmoids and the nasofrontal duct will have been converted into an inverted open basin.

A catheter is now placed into the sinus via the inner angle of the external incision. This is the only drain or packing used. The external wound is then closed with interrupted sutures and skin clips. No external dressing is applied.

Within three or four days, or as soon as it is evident that it is no longer needed, the catheter is withdrawn and the incision allowed to close at the spot. Never under any circumstances is a sound or a probe or a drainage tube allowed to touch the region of the nasofrontal duct. If any secretion forms within the sinus and its removal is deemed advisable it is removed via the external incision, reopening this incision if necessary at the site of the original catheter placement.

When healing is complete there remains little or no external evidence of the surgery.

Internally the site of the duct is marked by a blind bay or dimple.

CONCLUSIONS

1. Although the diagnostic problems are many times difficult they are not insurmountable when attacked with a knowledge of the anatomy and the physiological drainage mechanism.

2. Every effort should be made to restore the sinus and its duct to a normal anatomical and physiological status.

When this is found to be impossible then **only complete obliteration** of the sinus and its duct will effect a permanent cure.

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1. McAuliffe, G. W., Godell, H., and Wolff, H. G.: "Experimental Studies On Headache; Pain From The Nasal And Paranasal Structures." Research Publications Association For Research In Nervous And Mental Disease, XXIII:185, 1943.

ANNOUNCING

THE THIRTEENTH ANNUAL MEETING OF THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

Conference Headquarters — Municipal Auditorium

MARCH 6-9, 1950

GUEST SPEAKERS

Dr. Stuart C. Cullen, Iowa City
Anesthesiology
Dr. Francis W. Lynch, St. Paul
Dermatology
Dr. Moses Paulson, Baltimore
Gastro-enterology
Dr. Emil Novak, Baltimore
Gynecology
Dr. John Parke, Washington, D. C.
Gynecology
Dr. William Barry Wood, St. Louis
Medicine
Additional speaker to be announced
Medicine
Dr. H. Houston Merritt, New York
Neuropsychiatry
Dr. William J. Dieckmann, Chicago
Obstetrics

Dr. Parker Heath, Boston
Ophthalmology
Dr. Walter G. Stuck, San Antonio
Orthopedic Surgery
Dr. Theodore E. Walsh, St. Louis
Otolaryngology
Dr. William Boyd, Toronto, Canada
Pathology
Dr. William J. Orr, Buffalo
Pediatrics
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The Cancer Problem from the Standpoint of the Practicing Physician*

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New Orleans, La.

THE INDIVIDUAL practicing physician, particularly the general practitioner in a small community, is now expected by his medical colleagues and by his patients to have knowledge concerning the diagnosis and treatment of all human disturbances, whether they be psychic, metabolic, infectious, degenerative, or neoplastic. He is quizzed daily by patients who have read about or heard about the reports of new methods of diagnosis and treatment which fill both lay and medical publications. In addition, he is hounded by medical writers and by speakers at medical meetings to know more and more about all phases of medicine, surgery, the specialties, and the myriad present-day experimental studies. Despite the utter impossibility of meeting such standards, the many reminders of his inadequacies as well as the fair and unfair charges of culpability are enough to drive him distracted, cause him to develop a feeling of frustration, and to make him assume an attitude of resentment toward anyone who has the temerity to quiz or lecture him about cancer or anything else.

The fact remains that cancer is the second most common cause of death and that the incidence of this disease is increasing in line with the increasing age of the population. To reduce or even to maintain the present death rate means that every doctor, regardless of the type of his practice, must accept cancer as a problem with which he is concerned. Actually, the means for greatly decreasing the morbidity and mortality from cancer are known but remain to be used more extensively.

Widespread lay education concerning the value of a careful history and a thorough physical examination in revealing early cancer have led to a demand on the part of the public that these fundamental methods of examination be applied when patients report to their physicians for periodic physical evaluation. Unfortunately, the confidence of patients in their own doctor's ability to perform an ade-

quate examination for possible cancer has on many occasions been shaken as a result of a cursory history and incomplete physical examination. No longer is a mere pat on the back or an inadequate investigation by the physician accepted by patients as assurance that they need not be concerned about cancer.

Blithe or scornful dismissal by physicians of inquiries by patients concerning reports of new methods of diagnosis and treatment is not well received by informed laymen, and is likely to be interpreted as being due either to lack of interest or lack of information on the part of the physicians. It is a function of every physician in his capacity as a health educator to clarify the thoughts of patients concerning such presently popular matters as the isolated cell method of diagnosis, to point out the as yet uncertain value of various radioactive isotopes and chemical tests for cancer, and to explain the limited effectiveness of radioactive isotopes, nitrogen mustard gas, urethane, and other substances which are being investigated for their curative or palliative influence on cancer. Calm discussion of even the more spectacular reports, which so often interest and impress the public and, at the same time, annoy physicians, affords an excellent opportunity for the physician to present the sound facts about the diagnosis and treatment of cancer. Discussions of this sort make it possible for the physicians to explain to the inquisitive patient that, although research may eventually lead to remarkably simplified methods of diagnosis and treatment, reliance must still be placed largely, if not entirely, on the well-established methods of cancer diagnosis and treatment.

Physicians today are faced more and more with the problem of making decisions and advising patients concerning cancer diagnosis and treatment at a time when there are present only the vague symptoms and questionable lesions which nowadays lead many patients to suspect the possibility of cancer and to seek medical advice. The time has passed when the suspicion and advice about cancer can be delayed until there are well-developed symptoms or easily recognizable lesions. The physi-

* Read the North Mississippi Medical Society April 1949, Oxford, Miss.

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cian is, nowadays, frequently faced with the responsibility of recommending drastic diagnostic or therapeutic measures merely on the suspicion of cancer.

At a time when psychosomatic medicine is receiving so much attention by the public as well as by the medical profession, it is essential that every physician keep well in hand the frequent close similarity of the early symptoms of cancer, and the psychosomatic manifestations which mimic them. For example, mild indigestion and loss of weight due to cancer of the stomach may be quite indistinguishable clinically from a gastric neurosis, and there are still many instances in which mild digestive disturbances are being treated with antacids and antispasmodics, not only by the patient himself or by a pharmacist, but by a physician who has failed even to suspect the presence of gastric cancer. Now that feelings of guilt for the smoking of cigarettes are likely to be accepted as an explanation for a persistent cough, there is great danger of overlooking a bronchogenic carcinoma which is actually responsible for the cough. Changes in bowel habits, actually due to cancer of the rectum, which could easily be felt by digital examination or which could surely be revealed by proctoscopic examination, are frequently being incorrectly attributed to purely psychogenic causes. Abnormal uterine bleeding due to uterine cancer is often being ascribed to hormonal or emotional disturbances, and is being treated by oral or hypodermic hormone medication instead of by hysterectomy or radiation.

Early detection of precancerous lesions as well as actual cancer is principally the responsibility of the individual practicing physician. Through no conceivable expansion of special cancer detection centers can the problem of early cancer detection be met. Although cancer detection centers have served a useful education purpose in popularizing thorough physical examinations directed particularly to cancer, the number of patients seen in such centers is infinitesimal in relation to the total population. That every doctor's office should be a detection center must become a reality rather than a catchy slogan.

To illustrate the possible extent of cancer detection in supposedly well individuals which might be accomplished through careful history-taking, physical examination, simple endoscopic observations, and ordinary laboratory studies, not even including biopsies, it has been cal-

culated that 1,000 doctors doing two thorough examinations a week over a period of fifty weeks would bring to light 3,000 cases of cancer, to say nothing of the myriad other conditions which would be revealed at the same time.

Leach and Robbins; Anderson; McNealy and Smith, and others have published the results of studies intended to determine the culpability of patients and of physicians, alone or together, in delays in the diagnosis of cancer. Leach and Robbins found that the physician alone was responsible for delay in the diagnosis of cancer of all types in 27.8 per cent of the cases which they studied, and that the physician culpability was almost 50 per cent in the instance of internally located cancers. Anderson found that the physician alone was responsible for delay in cancer diagnosis in 16.7 per cent of a group of 72 cases. McNealy and Smith, directing attention especially to the matter of unnecessary rectal operations done in the presence of cancer of the large bowel, found that in 56 cases in which carcinoma could be easily felt by digital examination at the time of admission, 42.8 per cent of these cases had been treated for bowel conditions other than cancer; fifty per cent of this group of patients had been managed surgically, the other half medically. Of the entire series reported by McNealy and Smith, 17.85 per cent had had actual operative interventions in and about the rectum; 10.7 per cent had had hemorrhoidectomies; 5 per cent had had anal fistulectomies, and 3.57 per cent had had hemorrhoids injected with sclerosing materials. One person had had two hemorrhoidectomies. Many who had been under medical care had been given suppositories. In others, attention had been directed toward bleeding, diarrhea, or a spastic colon. McNealy and Smith point out that hemorrhoids are common in persons beyond 50 and that their presence by no means precludes the presence of carcinoma. Hemorrhoids are, as a matter of fact, usually present in conjunction with rectal cancer. Incidentally, approximately 75 per cent of all rectal cancers can be felt with the index finger. The average duration of symptoms in untreated cases studied by McNealy and Smith was 7.5 months, and the average duration of symptoms in patients who had had some type of rectal treatment not directed to the malignant lesion was 9 months.

Many well-known reasons account for the overlooking of early cancers by physicians, and

include: 1) the great demand which is made on the busy practitioner, who feels that he does not have sufficient time to do really thorough physical examinations; 2) the disinclination of many physicians to do a really thorough physical examination of a patient who has no complaints at all or who has only very minor complaints; 3) the tendency on the part of many physicians to depend too much on x-ray examinations of the chest or x-ray examinations of the gastrointestinal tract, and 4) the lack of sensitivity of many physicians in the matter of cancer diagnosis, growing out of the fact that even when they make an early diagnosis of cancer the patient is referred to a surgeon or radiologist, or to a specialist who thereafter takes over the management of the patient and is given credit for the good results in the cases in which early diagnosis is made. On the other hand, the late incurable cases are soon referred back to the general practitioner after a palliative operation is performed, and he then spends many days and nights answering questions which have been left unanswered, dressing the wound that is still draining, controlling pain, and finally signing the death certificate. As Anderson states, it is no wonder that the enthusiasm of the general practitioner is dulled when such cases constitute much of his experience with cancer diagnosis and treatment.

It is manifestly necessary that the individual physician, whether he be practicing in a large or a small community, must provide for his patient with suspected or known cancer, not only his own clinical knowledge and judgment, but all the diagnostic and consultative benefits which present clinical knowledge permits and which are being applied in the care of cancer patients in large medical centers. Unless the individual physician is prepared to do this, he can expect that his patients will seek advice and treatment elsewhere by physicians who keep themselves well-acquainted with current developments in the field of cancer, who have and use proper diagnostic equipment in their offices, and who are willing to avail themselves of appropriate consultation.

Many physicians in both large and small communities have made the adjustments and provided themselves with the facilities necessary to meet the exacting requirements for early diagnosis and adequate treatment of cancer. Although thoroughly satisfactory working arrangements already exist in many communities, there can be no question that there

is room for much improvement in many quarters.

The problem of keeping abreast of the new developments concerning cancer is just one of the many matters which vex the busy physician. Regular, critical reading of medical journals and texts remains the most practical and generally available means for post-graduate education. In addition to the general medical and surgical journals which contain articles on cancer, there are presently available several publications devoted entirely to cancer, including "Cancer", "Cancer Research", "Journal of the National Cancer Institute", and "The British Journal of Cancer." Every physician who undertakes the evaluation and guidance of patients with potentially malignant lesions, as well as benign and malignant neoplasms, can obtain much valuable information by having readily at hand several texts on neoplastic disease. Outstanding current texts of this sort are those by Ackerman and Regato, Pack and Livingston, and a small but useful compend entitled "Cancer, A Manual for Physicians," which will soon be available in a recently revised edition. Authoritative pamphlets on cancer are being distributed to all physicians by the American Cancer Society, and will serve as good sources of practical information on cancer. In Louisiana, a monthly leaflet entitled "Neoplastic Disease Abstracts" is prepared by a group of surgeons who extensively review the current cancer literature. This leaflet is distributed to every physician in the state through funds made available by the American Cancer Society.

An indexed annotated periodical bibliography entitled "Cancer Current Literature" is now published monthly by the American Cancer Society; it is available to physicians, research workers, and scientific libraries, and contains a large number of abstracts of the current literature on all aspects of cancer. For physicians or research workers who desire a very extensive listing of the world literature on cancer, there is now available through the American Cancer Society an "Index to Current Periodical Literature on Neoplastic Diseases and List of Current Books."

Attendance at well-arranged review courses devoted partly or entirely to cancer is of great value, but there are many practical limitations to this method of acquiring the newer knowledge about cancer, especially when travel over a long distance is necessary in order to attend such courses. Refresher courses, arranged un-

der the auspices of a state medical society cancer committee and conducted by traveling instructors who visit small communities, can be more easily taken advantage of by physicians in isolated communities who find it practically impossible to leave their practice to attend other types of instructional courses. Observation of the functioning of well-conducted cancer detection centers affords an opportunity for postgraduate education for those physicians who wish to acquaint themselves with special diagnostic procedures, including the performance of certain endoscopic examinations. Symposia on cancer presented at local medical society meetings by its own members or by guest speakers will always remain an effective means of bringing to many physicians cancer information which they are not likely to acquire by other means. Hospital staff meetings, at which cancer problems and deaths due to cancer are critically reviewed, afford excellent opportunities for the exchange of ideas and for the discussion of new trends in the diagnosis and management of cancer. Attendance at the tumor clinics operating in many of the larger communities, or the development of local tumor clinics so conducted that all interested members of the staff may participate in the consideration of various aspects of cancer, are still other valuable means of disseminating current knowledge and permitting interchange of ideas concerning cancer.

A large number of moving pictures, many of which are in color and some of which have accompanying soundtracks, are now available from several sources for use in teaching diagnostic procedures and surgical techniques for cancer. Such films may be obtained through the film libraries of the American College of Surgeons, the American Medical Association, the American Cancer Society, and certain commercial firms, including Davis and Geck, for use at medical society and hospital staff meetings.

Television has already been used to a limited extent in bringing to large audiences close-up views of operations for cancer which could not be seen by such large audiences in an operating room. Color television, which is anticipated in the near future, may be expected to extend further the usefulness of this method of instruction in cancer surgery.

For pathologists who are desirous of perfecting themselves in isolated cell methods of diagnosis, special courses in cytologic diagnosis

are now available at several centers throughout the country.

In addition to increasing his own knowledge concerning cancer, it is necessary that every physician put aside petty jealousies or dislikes felt towards physicians in his community who are making mistakes in the diagnosis and management of cancer and, insofar as possible, every attempt must be made by all well-informed physicians to serve as educators of their less well-informed fellow practitioners.

Practice of the art of medicine is under no circumstances required to a greater degree than in preparing patients for the diagnostic and therapeutic measures which are required for the proper management of suspected as well as evident cancer. Failure to understand the average patient's feelings in respect to cancer and to assist in the substitution of a calm and rational attitude for a feeling of hopefulness is a function of the individual physician, as much as it is his function to make an accurate diagnosis and recommend appropriate treatment. The disarming fear of cancer which is still felt by a large segment of the population must be kept in mind by the physician, whether it be in connection with personal discussions with patients who suspect that they have cancer, or in talks before lay groups. Alarmism on the part of physicians, as well as thoughtless and unintentional utterances which may be misinterpreted, often lead to most undesirable patient reactions, and sometimes to disastrous results. Careless use of the terms cancer, carcinoma, and malignancy may drive a patient into a corner, and so consume him with fear that he is unwilling to proceed with necessary diagnostic procedures such as biopsy, x-ray studies, or other examinations. It has been suggested that use by the physician of such well-understood and non-alarming words as "harmful" or "harmless" be substituted for "malignant" and "benign" when discussing lesions which require further investigation by biopsy or other diagnostic procedures. There may of course be exceptional instances in which such protection of his feelings may be resented by the patient.

Most intelligent patients today realize that more than simple clinical evaluation is necessary in the instance of many conditions, but there are still many individuals who are likely to interpret any lack of immediate positiveness in regard to the diagnosis of cancer as evidence of lack of knowledge on the part of the physician. Although a physician must often

admit his inability to make a positive diagnosis on the basis of the history and ordinary physical examination alone, it is important, under such circumstances, that the physician leave no doubt in the patient's mind about the need for further studies. In any event, every honest device must be employed to present to the patient the proper course of action without arousing fear. Rational action and a feeling of confidence in respect to curability must be developed in order to assure the patient's submission to biopsy or to radical surgical procedures.

Cancer consciousness on the part of every physician and acceptance of certain clinical facts and concepts are necessary if improved results are to be achieved in cancer of all parts of the body. For example, if a higher cure rate is to be attained in cancer of the stomach, all patients with persistent indigestion must be suspected of possibly having gastric cancer, and x-ray examinations of the stomach must be made more frequently, even though it must be realized at the same time that such x-ray examinations are often only a means of detecting a gastric lesion rather than a means of differentiating a malignant from a non-malignant lesion. Gastric lesions in certain locations, such as those along the greater curvature and those in the immediate prepyloric region, must be considered to be malignant, and such patients must be given the benefit of early operation rather than being subjected to prolonged therapeutic tests and repeated x-ray studies, both of which are so frequently misleading. As a means of further reducing the mortality in gastric cancer, gastric polyps and atrophic gastritis, as well as gastric ulcer, must be considered to be pre-cancerous lesions.

Uterine bleeding following the menopause must be suspected as being due to cancer, until appropriate diagnostic procedures can satisfactorily eliminate this possibility. The practice of administering hormone and other drug therapy without proper diagnostic studies must be discontinued.

Breast lesions must almost always be considered from the standpoint of their potentially malignant nature, and adequate biopsy or total removal of questionable breast lesions must be more generally practiced.

The cure rate in skin cancer, which is already rather satisfactory, could be even further improved if the malignant potentialities of a variety of skin lesions were more generally recognized, and if early adequate excisions of

cutaneous neoplasms were more often done. Compromise methods of treatment, such as x-ray, radium, electro-surgical, chemical, and other means of treatment of skin lesions, especially those about the face, are still being unwisely employed in many instances when surgical excision would yield far better results.

If the death rate from cancer of the lung is to be reduced, more patients with early respiratory tract symptoms must have chest x-ray examinations, bronchoscopic examinations including biopsies, and cytologic studies of the sputum.

If rectal cancer mortality is to be reduced, simple digital examination of the rectum must be performed more generally. Also, proctoscopy and sigmoidoscopy must be performed, not only in the instance of every patient with rectal complaints but as a routine part of the physical examination of all patients over 40 years of age.

If the present mortality from carcinoma of the vulva is to be reduced, all patients with ulcerative lesions of the vulva should have not only serological and dark field examinations for syphilis, a Frei test, a scraping and smear examination for Donovan bodies and bacteria, but biopsy for possible tuberculosis or cancer.

Consultation, not only of the sort supplied by roentgenologists, clinical laboratory workers, and specialists in the narrower fields of medicine, but with men practicing in the broad fields of internal medicine, general surgery, or general practice, may often well be sought by the individual physician who first sees a patient with symptoms or findings which may be due to cancer. The highly individualistic nature of most doctors, along with the willingness or desire on the part of many patients to put full faith in the judgment of an individual physician, has frequently resulted in delays in diagnosis, as well as inadequate treatment of both early and late cancer. The growing acceptance on the part of the medical profession of the fact that none of us can hope to be complete masters of the entire field of medicine has led to an increased willingness or even insistence upon consultation in respect to diagnosis, the planning of treatment, and actual treatment of patients with cancer. In no condition more than in the instance of cancer is there need for pooling of community knowledge, willingness to change views, and readiness to accept information and advice from others.

Office equipment of the physician who accepts the responsibility of making an early diagnosis of cancer must include readily-accessible and well-illuminated endoscopic instruments which are kept in good repair. All too frequently such equipment is purchased but seldom used because it is too much trouble to get it out of hiding in a drawer or cabinet, or because it is not in proper working order.

Equipment for securing biopsy specimens, and bottles or small jars containing a solution for the preservation of biopsy material, are requisite parts of every doctor's office equipment, unless he is in the habit of performing biopsies in a hospital, or is prepared to refer patients to someone else for the securing of biopsy specimens. Proper local facilities or other suitable arrangements for doing bacteriological and serological studies, observing reactions to antigens, and securing secretions and scrapings for malignant cells, are additional requirements for making an early diagnosis of cancer and for differentiating cancer from granulomatous, ulcerative, and other lesions which may stimulate it. If the laboratory in which examination of collected materials is to be done is some distance away, suitable containers for mailing specimens should be readily at hand; otherwise, there is a natural inclination to omit the collection of specimens under such circumstances.

A carefully-taken history will often furnish data which goes far to make a diagnosis of even early cancer, while in other instances information gained from the history furnishes a clue which may be followed in performing physical examinations or in securing x-ray and other laboratory aids in the diagnosis, either of cancer or some other condition, which conclusively accounts for the patient's condition. The common danger signals of cancer, which are now so familiar to a large part of the general population as a result of intensive lay educational programs, are frequently overlooked or dismissed by physicians, even when it is because of the patient's having noticed one or more of such symptoms that he seeks medical advice.

Physical examination, when done with proper thoroughness, will reveal a large number of even early cancers in many parts of the body. This is especially true when ordinary physical examination is supplemented by endoscopic examination of the sort which can be easily performed by any physician. It seems trite to say that no examination of a woman for can-

cer is complete without the use of a vaginal speculum, yet it is not unusual that the use of the vaginal speculum is omitted in the examination of women, even when they have requested a thorough physical survey. It is similarly true that use of the sigmoidoscope is omitted all too frequently. Because of the many asymptomatic lesions which may be revealed by sigmoidoscopy, this sort of examination should be done as a routine part of the examination of all persons over forty years of age, and it should also be done in younger individuals if there is even the slightest symptom suggesting the presence of any abnormality of the part of the large intestine which can be seen through a sigmoidoscope. Physicians with ordinary skill can perform laryngoscopic examinations, and such examinations should be done whenever a patient complains of hoarseness or has a persistent cough; in many instances it will be advisable to have a supplementary laryngoscopic examination performed by a specialist. Cystoscopic and especially bronchoscopic examinations must usually be performed by appropriate specialists. Surgical procedures performed through the cystoscope or bronchoscope, including even biopsy, should almost invariably be done by a specialist. Gastroscopy, peritoneoscopy, and thoracoscopy are all endoscopic methods of examination which the individual physician should, on occasions, provide for patients who have symptoms which suggest that one or the other of these methods of endoscopy may at least reveal the presence of a lesion, if not permit accurate determination of its nature. In order that they can furnish proper service to their patients, physicians in small communities will do well to see to it that at least one man, oftentimes one of the younger men in the community, is trained in at least diagnostic endoscopic procedures of all sorts.

Improvement in the facilities and the strengthening of the personnel in the pathology departments of existing hospitals, as well as the construction of more and more well-planned community hospitals throughout the country, are making available to more and more physicians the technical assistance and pathological laboratory services which are so greatly needed at the present time. From all indications, however, for quite some time to come there will be a serious shortage of well-trained pathologists, necessitating only part-time service of a competent pathologist to several hospitals in a given geographical

area. It is more or less evident that the pathology laboratories of existing and new small hospitals must be so designed and equipped that the microscopy and biochemistry sections of the laboratories will be adequate to permit clinical applications of many procedures which have, until recently, been in the research phase or which have been performed only in large hospitals.

The lack of a sufficient number of radiologists, trained in both diagnosis and therapy, is being met in many areas by dividing the services of an experienced radiologist between several hospitals, each of which is able to provide adequate x-ray equipment, but none of which alone can support a full-time well-trained radiologist. There is a growing feeling that roentgen and radium therapy should be directed by a qualified radiologist at all times, and it is the opinion of many that, especially in the field of gynecologic malignancy, treatment should be guided by the collaborative efforts of a radiologist and a man experienced in the field of gynecologic surgery.

In no field of surgery more than in the surgery of cancer must the surgeon be willing to critically evaluate his own ability and the ability of other surgeons in his area. Nothing can be more disastrous to the patient, the surgeon, the reputation of medical services in a community, and to progress in cancer control, than the performance of inadequate surgery for cancer. Practitioners must be extremely critical, not only of their own ability but of the ability of others in their local community to properly perform the radical surgical procedures which are so often necessary to deal adequately with cancer. The increase in the number of well-trained young surgeons, as well as the increased willingness of older surgeons in small communities to assist in the completion of the training of young surgeons, are factors which are already resulting in greatly improved results in cancer surgery. Although adequate local hospital facilities and well-trained surgeons should be increasingly depended upon to provide adequate treatment of cancer in most regions of the body, it will inevitably be necessary to refer to distant centers some patients who require highly specialized treatment.

It is not enough that a surgeon possess the technical ability to perform radical cancer surgery. If his results are to be as good as they might possibly be, he must be so endowed temperamentally that he is willing to repeated-

ly perform the tedious dissections which he knows are ideally required, never giving way to short cuts because of the press of time or fatigue on his part. Furthermore, the services of a competent anesthetist and the ready availability of sufficient amounts of blood for preoperative preparation, as well as for support of the patient during and after operation, are required integral parts of successful cancer surgery. The surgeon does not do justice to the patient, himself, the hospital in which he is working, or the community in which he lives, unless he is provided with all the ancillary personnel, physical facilities, and services which are needed for successful cancer surgery. In his attempts to secure all that can be provided in the way of such facilities, the surgeon should receive the support of the internists and other non-surgical practitioners who are members of the hospital staff.

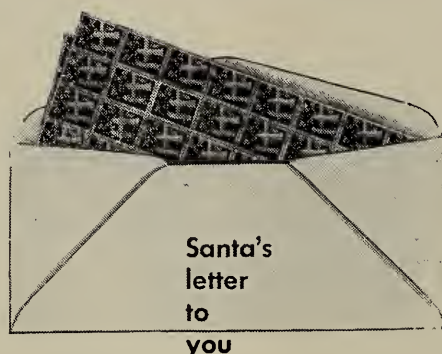
Care of the cancer patient after he returns home is a matter which has been considered by many medical writers, including surgeons, internists, and psychiatrists. The emotional disturbances which cancer causes both to the patient and to his family must at all stages be taken into account. A state of practical indigency, arising out of loss of wage-earning, high hospital costs, increased household expenses, and many other factors, frequently overtakes the family of a patient with cancer, thus creating financial problems which would not have existed had it not been for the development of cancer. Pain, coupled with economic insecurity, and sometimes offensive odors, combine to create difficult home problems in many instances. In other instances, feeding problems arise and require special provisions, sometimes made only with great difficulty. The adjustment to a colostomy existence often requires thought and sympathetic understanding on the part of all concerned with the care of the cancer patient who has a colostomy. These, and many other problems which arise and involve the physician who is caring for a cancer patient, demand great understanding, sympathy, and patience in addition to purely professional knowledge about cancer.

The incidence of cancer, as well as the number of deaths from cancer, is still generally increasing despite educational programs and greatly improved facilities for the early diagnosis and treatment of cancer. This fact is responsible not only for a feeling of discouragement on the part of many well-informed lay-

men, but has led to pessimism on the part of many physicians. It is, therefore, extremely important that the general public, as well as the medical profession, be appraised and frequently reminded of the fact that, although the number of deaths from cancer is increasing, the cure rate is nevertheless progressively improving. Most encouraging is the fact that in states in which lay and professional educational programs have been conducted most intensively, the cure rate has been increased to such an extent that there has been a very striking decrease in the ratio between the number of cancer deaths and the incidence of cancer.

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The Use and Abuse of Urinary Antiseptics

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URINARY TRACT infections are of interest to every physician because regardless of one's specialty these conditions are encountered almost daily. It is important, therefore, for all of us who practice medicine to have a working knowledge of the etiological factors involved and the necessary steps in instituting the proper effective treatment in eradicating urinary infections. The family physician and general practitioner are often the first to be consulted in the treatment in these diseases. The internist and diagnostician are frequently confronted with the management of a pyuria problem. The pediatrician finds urinary tract infection to be the most common disorder of childhood. The obstetrician is on the alert for the appearance of a complicating pyelonephritis of pregnancy. The surgeon is often annoyed by having the convalescence of his patient prolonged and complicated by a urinary tract infection especially in cases where postoperative catheterization is necessary. Stones of recumbency with a persistent type of urinary infection in patients immobilized in body casts are encountered by orthopedists. The urologist, of course, sees many and varied types of infections of the urinary tract.

A complete urological examination is the most scientific manner of approach to the problem of treatment of urinary tract infections, but it is not always practical or feasible to subject the patient to this procedure and, in many instances, it is not necessary. A complete urological investigation consists of a careful history and physical, a urinalysis, a plain roentgenogram of the region of the kidneys, ureters and bladder, a cystoscopic examination with attention to the condition of urethra and bladder, the character of spurts of urine from each ureteral orifice, renal function tests, catheterization of ureters, collection of bilateral renal specimens for microscopic examination and cultures, with guinea pig inoculation when indicated, and bilateral pyelo-ureterograms. Excretory urograms also yield invaluable evi-

dence as to function, anomalies, stasis, calculi, obstruction and other pathological conditions such as tumors.

Pus in the urine may have its origin from an infection involving any point from the renal cortex to the urethral meatus. It is beyond the scope of this paper to deal with the diagnosis of urinary infection. There are a few points, however, concerning the collection of urine which are of practical interest. In the male it is a good practice to collect a two-glass specimen. If pus is found only in the first glass, it would indicate that its source is from below the vesical neck; if pus is present in both glasses, it is assumed that infection is present in the bladder and/or in the upper urinary tract. In females if the voided specimen is negative it may be certain that the urine is free of pus, but if the specimen contains pus a catheterized specimen should then be examined to be sure that the pus cells did not have their origin from the vulva or vaginal introitus. For cultural purposes the urine should be collected in the male by retracting the prepuce, sponging the glans penis with an alcohol swab and obtaining specimens one and two in sterile containers; in the female only a catheterized specimen obtained under aseptic conditions and collected in a sterile container. The specimen should be examined and the cultural media inoculated promptly after obtaining it, as contaminating organisms may soon outgrow the etiological bacteria.

An ordinary Gram's stain of the urinary sediment, which is an easy office procedure, furnishes much information as to the type of infection and gives an important clue as to the best drug to be used in treatment. The pH of the urine should also be carefully noted as this in itself will differentiate between certain Gram positive cocci and Gram negative bacilli. We have drugs available now which are specific for certain types of infections and which have little or no effect on other types, therefore a culture which specifically identifies the organism, and in vitro sensitivity tests, are essential in the intelligent and effective treatment of persistent urinary infections.

Early treatment and adequate initial dosage of the chosen drug should be emphasized. Many serious urinary tract infections have been avoided by careful physicians who include a routine urinalysis in every examination, and who, on finding pus cells and bacteria present, institute treatment early. Since therapeutic results are obtained quickly and late continued treatment is of little value, the dosage of any drug should be adequate from the start to obtain a bactericidal or bacteriostatic effect. It is a known fact that certain organisms can develop a tolerance and an immunity to drugs if given in small doses, whereas a larger dose initially would have been bactericidal. Once such an immunity is developed it is usually permanent for that organism. That is particularly true of streptomycin. In vitro sensitivity tests are a great aid in treating any urinary tract infection, especially where therapeutic response is slow. It is important to know if any organism is immune to the drug, or if only too small a dose of the drug is being given.

The drugs and antibiotics which may be used in treating urinary infections are the sulfonamides, penicillin, hexamethylamine, mandelic acid, neoarsphenamine, mapharsen, streptomycin, chloromycetin, polymyxin, gantrosan, acriflavine, caprokol and the azo dyes. The drugs among this group that are of questionable value and should receive little consideration in the treatment of urinary infections are acriflavine, caprokol, the azo dyes (sold under trade names of serenium and pyridium), mallophane, and under the same category would come sandalwood oil and methylene blue. Some of these drugs do have an analgesic effect in palliating the symptoms of inflammation in the urinary tract.

It has been shown that the sulfonamides will cure 93 per cent of the Gram negative bacillary urinary infections. Since these organisms are the cause of approximately 85 per cent of the infections, the sulfonamides are the logical drugs to use first because they are usually well tolerated, can be taken orally at home, and are available at low cost. If the desired results are not obtained in a week, a urological investigation with urine culture and sensitivity tests is indicated to see if streptomycin, aureomycin or chloromycetin would be effective. Sulfadiazine is the sulfonamide of choice as it is effective, usually well tolerated and fairly soluble. It should be given in doses of 1 gram every four to six hours for the first two or

three days, then the dosage can be reduced. The administration of an alkali and the forcing of fluids are two precautions which should always be taken in using this drug to prevent sulfa crystal formation. The drug should be discontinued should allergic skin reaction occur, or persistent nausea and vomiting or hematuria with sulfonamide crystals appear. Other sulfonamides of value are sulfathiazole, sulfacetamide, sulfamerazine, sulfanilamide, sulfathaladine and sulfasuxidine.

In those cases of recurrent type of urinary infection involving the colon bacillus, it has been shown that favorable results can be obtained by administering sulfathaladine for its sterilizing effects upon the intestinal tract. The rationale of this treatment is:

First: Elimination of the source of infection from the bowel for a period of at least three weeks so that the tissues of the urinary tract may have time to recover sufficient natural resistance to infection to protect them against recurrence.

Second: The beneficial result of the drug exerted upon the intestinal tract may decrease the avenues for escape of organisms into the blood stream or lymphatic through which they may have been reaching the urinary tract.

Third: There may be certain strains of *E. coli* with a selective affinity for the urinary tract which are completely and permanently eradicated as a result of this treatment.

A new sulfonamide which should be available soon is gantrosan. It is very effective against all Gram negative bacilli and especially so against bacillus proteus which so far has been resistant to all available drugs. It is highly soluble which will eliminate the hazard of crystal formation and does not require alkalization of the urine. The oral dosage is 1 gram every four hours and the intravenous dosage of 2 grams every eight hours. Again we can see the value of a culture with identification of the organism. If the organism is bacillus proteus gantrosan would certainly be the drug of choice in treatment.

Penicillin is the most abused antibiotic today in treating urinary infections. It is a common occurrence to see a patient with a bacillary urinary infection who has been treated a week with penicillin with no improvement. It is effective only against gonococci, staphylococci and beta hemolytic streptococci. It has no effect against *Streptococcus fecalis* or viridans, both frequent invaders of the urinary tract. In the case of a mixed infection of cocci

and bacilli, it is advisable to prescribe sulfonamides in conjunction with penicillin as some of the bacilli elaborate a penicillinase which renders the penicillin ineffective against the cocci. A daily dosage of 300,000 units of the oil-procaine penicillin preparation or 25,000 to 50,000 units of the aqueous solution every three hours for five to ten days is usually adequate treatment.

Streptomycin is very effective against *E. coli* and moderately so against other Gram negative organisms. Most organisms readily develop an immunity to the drug which is irreversible, therefore adequate initial dosage is important. Two or three grams a day should be given in divided doses of every three to four hours. It is necessary to give it parenterally as it is not absorbed from the gastrointestinal tract. It is eliminated rather slowly by the kidneys so a fairly satisfactory concentration of the drug in the urine and blood can be maintained by administration at twelve-hour intervals. Streptomycin has proved to be of great value in arresting early cases of tuberculosis of the kidneys. It must be given over a period of two or three months in these cases.

Aureomycin and chloromycetin are closely related antibiotics and have a comparable effect on the Gram negative group of organisms with the exception that chloromycetin is effective against some strains of *Bacillus proteus*, whereas aureomycin is not. Chloromycetin is the better antibiotic as it is very effective against the entire spectrum of Gram negative organisms with the single exception of *Pseudomonas aeruginosa*. It is also effective against *Streptococcus fecalis*. Effective doses of each of these preparations are 250 mg. every four to six hours for six to ten days. The most marked untoward effects of aureomycin is nausea and chloromycetin is diarrhea.

A new antibiotic known as polymyxin appears to be the most potent antibiotic against Gram negative organisms and has been found to have as high as eighty times the activity of streptomycin against susceptible organisms and to be more effective than either aureomycin or chloromycetin. The most outstanding finding is its effectiveness against *Pseudomonas aeruginosa* which so far has resisted all known medication. It differs from most antibiotics in that its action is bactericidal rather than bacteriostatic. Some investigators have reported toxic reactions manifested by the appearance in the urine of albumin, casts, and red blood cells and also paresthesia about

the face. It has been found that these symptoms do not occur if the dose does not exceed 3 mg. per kilo per 24 hours. The recommended dose is 2.5 mg. per kilo per 24 hours in divided doses every four to six hours for a period of four to six days. Its nephrotoxic and neurotoxic effects vary with different batches and are thought to be due to impurities and it is hoped that further refinements will eliminate this undesirable property.

Mandelic acid is effective against Gram negative organisms with the exception of *B. proteus* and *Pseudomonas aeruginosa*. It is very irritating to the kidney and should not be given in the presence of impaired renal function. To be effective the fluid intake should be limited to 1500 cc. daily and the pH of the urine should be below 5.5. This can be obtained by giving ammonium chloride or sodium acid phosphate with the drug. The pH can easily be checked by an indicator such as nitrazine paper. The dosage of both calcium mandelate and mandelamine should be 1 gram four times daily, not to exceed ten days.

Hexamethylamine or methenamine is a drug which was in use long before the advent of the sulfonamides and antibiotics and is still an effective agent against Gram negative organisms. It is marketed under trade names of uritone, urophosphate, urotropin and others. Its action depends upon hydrolysis with the formation of formaldehyde in an acid urine. It may cause some bladder irritation for this reason. The average dosage is 1 gram four times daily, combined with a like dose of ammonium chloride.

Neosarsphenamine and mapharsen are very effective against staphylococcal infections of the kidney and are a specific for amicrobic pyuria, a virus condition found in young adults and characterized by distressing bladder symptoms and pyuria in the absence of bacteria. Usually four to six injections of small doses of the drugs at three-to-five-day intervals produce a cure.

In conclusion, I would like to state that the indications for the use of urinary antiseptics are prophylactic and corrective. The appropriate drug in any case requires at least a working knowledge of the nature of the infection at hand which may be gained by a study of the urinary sediment by the Gram method. The misuse and abuse of urinary antiseptics centers largely around their administration in chronic pyurias accompanying surgical lesions such as renal calculi, hydro-

nephrosis, renal tuberculosis, hydro-ureters, ureteroceles, prostatism with urinary stasis, vesical diverticula, vesical neoplasms, vesical calculi, urethral strictures, chronic prostatic abscesses, urethritis in women when pus has been found on a voided specimen, and amicrobic pyuria. A last word of caution should be added against the indiscriminate use of penicillin in urinary infections; statistics prove that the odds are about 8 to 2 against its ef-

fectiveness in these conditions. Any infection which persists after reasonable therapy should have a complete urological investigation with cultures and in vitro sensitivity tests. The development of new drugs and antibiotics with specific effects against certain organisms now make identification of the infecting organism necessary for effective treatment of urinary infections.

Technique of Longitudinal Pin Fixation in Fractures of the Clavicle and Jaw

ARTICLE IV

by

LESLIE V. RUSH, M.D.*

and

H. LOWRY RUSH, M.D.*

THERE IS a certain similarity of technique in the treatment of fractures of the clavicle and jaw, and in both regions, open operation is indicated in but exceptional instances. In both bones, the contact compression factor is relatively absent because the physiological pull of the attached muscles is transverse.

Clavicle

Fifteen cases of fractures of the clavicle have been treated by axial fixation using either the Kirschner wire or longitudinal pin.

It is difficult to draw any specific rules as to when open reduction of the clavicle is a rational procedure. The clavicle, being cancellous bone, heals kindly in most instances despite malposition of the fragments. Open operation upon the clavicle has been, for many years, considered a radical procedure. In children we still feel that it is contraindicated, but the excellent results often secured by axial fixation, the almost immediate return to function of the extremity, the comfort of the patient, and the avoidance of deltoid atrophy and peri-articular adhesions of the shoulder, strongly recommend the method in certain selected cases of fracture of the clavicle in adults. Until recently, our experiences in longitudinal fixation of fractures of the clavicle was limited to the use of the Kirschner wire, which

was passed axially, allowing the extremity of the wire to emit from the skin either from the anterior or posterior surface of the shoulder. The fear that the wire would migrate deterred us from cutting it flush at the bone. In the past year, the longitudinal pin has been adapted to this use in the clavicle, and has the advantage that the hooked head grasps the cortex of the bone to prevent migration and can be buried beneath the soft tissue so that the pin can remain as long as desired. Otherwise, it has no advantage over the Kirschner wire for this type fixation.

Because of the variance of forms in which fractures of the clavicle occur, and the marked differences in the density of the bone structure of the clavicle, our experiences with this type fixation have been varied. The clavicular fragments, being attached to either end by ligamentous structures only, renders difficult the drive of the pin into the clavicle with the mallet without preliminary drilling. While this is not true in those individuals with soft cancellous bone in the clavicle, we have seen some cases in which the hardness of the clavicle makes it difficult to introduce either wire or pin.

Furthermore in certain individuals, there is a tendency for the fractured clavicle to overlap even in the recumbent position; whereas, in other individuals, primarily elderly people with rounded shoulders, there is a tendency for distraction to occur. In two instances, because of

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this pumping action of the clavicle, there has been a tendency for the medullary pin to back out, with loss of the security of fixation. In transverse fractures, this disagreeable feature can be eliminated by taking an additional wire suture to maintain apposition of the fractured surfaces, and prevent this contingency. This factor has been taken into consideration by McKeever¹, who uses a pin threaded at one end for fixation. At the present time, our preference for internal fixation in transverse or oblique fractures of the clavicle without comminution, is axial transfixion by the longitudinal pin with the added wire suture for security.

Technique

The fracture is exposed through a minimal incision just below the clavicle. Periosteal dissection is usually unnecessary, and is carried out minimally as indicated. For fixation a longitudinal pin is chosen of suitable length and of a diameter of either three-thirty-seconds inch or one-eighth inch. (Figure 1.)

The clavicle is S-shaped, and the pin is introduced first into the medial and then into the lateral fragments, allowing it to emerge at either the anterior or posterior convexity of the clavicle, and through a stab wound, the point of the Steinman pin is exposed and then withdrawn. Through this opening, the longitudinal pin is introduced. (Preliminary to the passage of the longitudinal pin across the fracture, an oblique drill hole is made to either side of the fracture, through which a suture of small stainless steel wire is threaded but not tied.)

The longitudinal pin is then introduced into the axial drill hole in the opposing fragment, and as the bone is realigned, the pin is driven home until the hooked head firmly grasps the cortex of the bone. The wire suture is then tied, and after checkup x-rays, the wound is closed. It is not, as a rule, necessary to immobilize the shoulder.

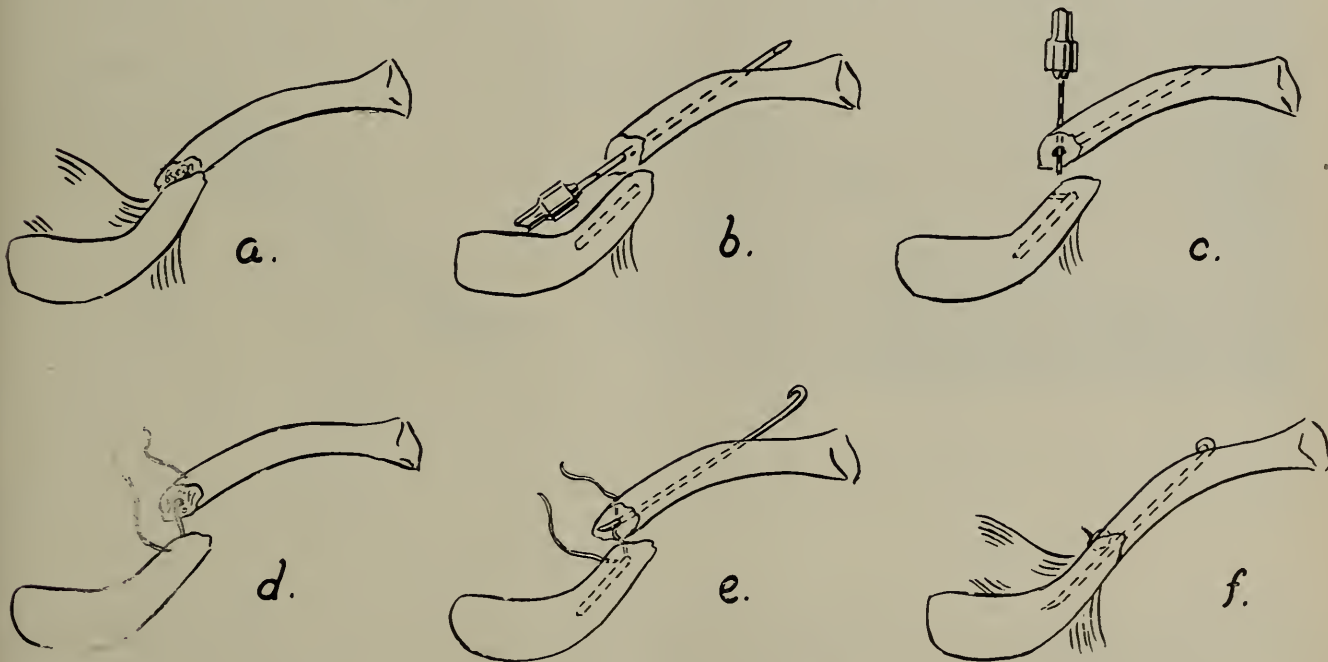


FIGURE 1

Schematic drawing showing technique for longitudinal pin fixation of clavicle.

- (a) The fracture.
- (b) Artificial medullary canal constructed by drilling with Steinmann pin, allowing point to emerge anteriorly on medial fragment.
- (c) Oblique drill hole made in each fragment for wire suture.
- (d) The suture has been placed but not tied, preliminary to passage of pin.
- (e) Longitudinal pin has been introduced into the axial drill hole of the medial fragment.
- (f) Fracture has been reduced, the pin placed and the wire suture tied or twisted.

Since the clavicle is a cancellous bone and possesses no medullary canal, an artificial one is created by preliminary axial drilling with a Steinman pin of the same diameter as the

In the event of comminuted fragments, the technique is modified in that the fragments are fixed about the pin in the intervening gap with encircling stainless steel wires.

Mandible

All fractures of the jaw are essentially compound fractures, and potential candidates for infection and osteomyelitis. In certain cases, more specifically the edentulous jaw, open operation is the only means by which

satisfactory reconstruction can be accomplished. We have found that the longitudinal pin can be used most advantageously for fixation in these cases, and three fractures of the inferior maxilla have been operated upon in this manner. (Figure 2.) At the present time, we

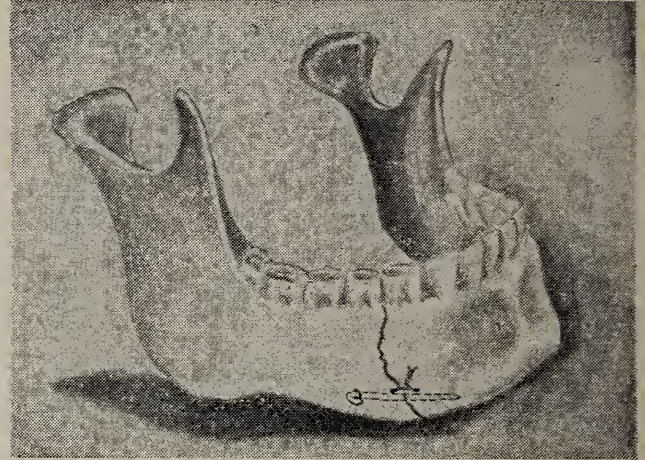


FIGURE 2

Artist drawing before and after single fracture of the jaw showing method of fixation by longitudinal pin with wire suture. This entails open operation.

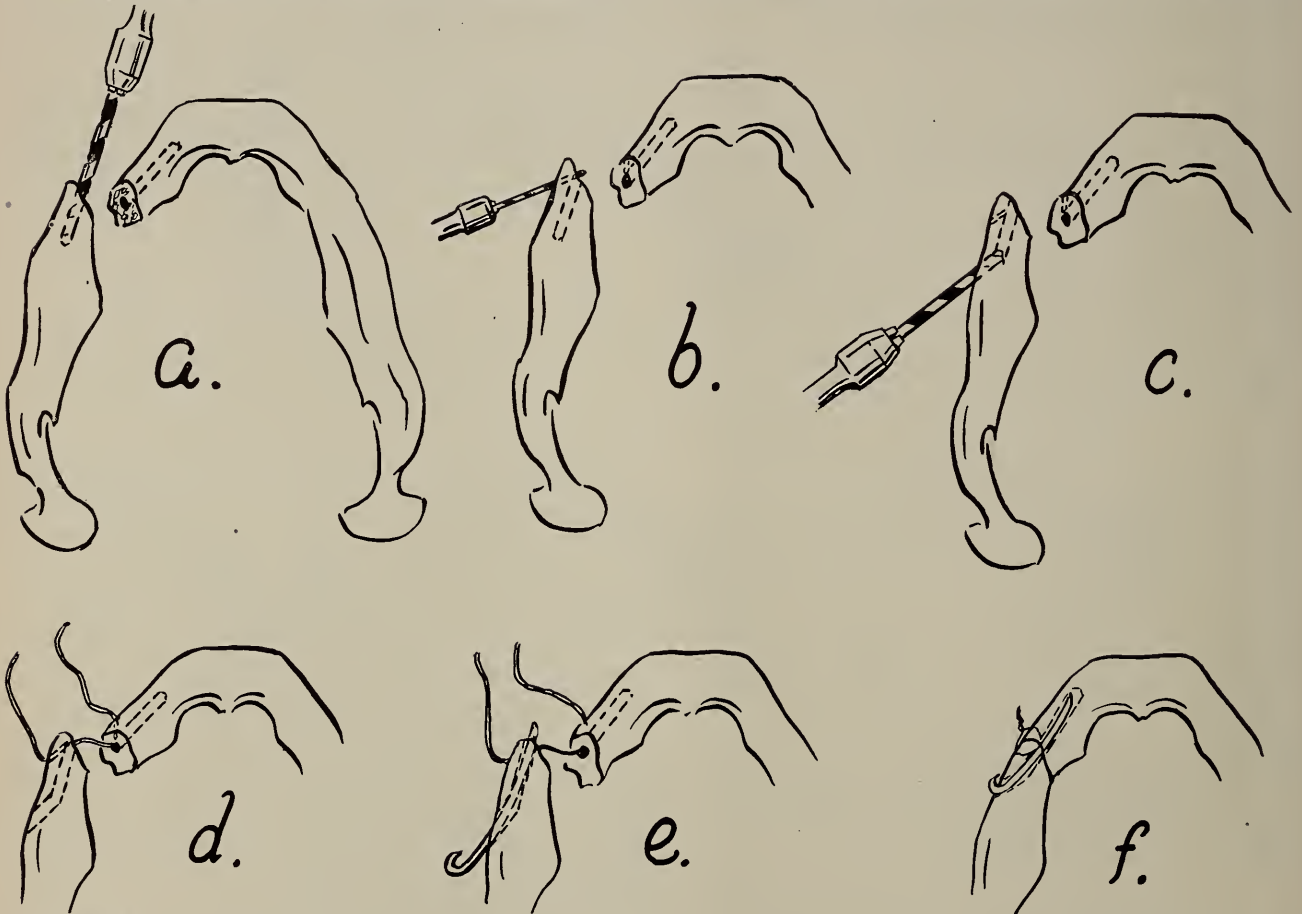


FIGURE 3

- Schematic drawing showing technique of operation viewing the jaw from the inferior surface.
- Artificial medullary canal established by axial drilling near lower border.
 - Oblique drill hole made in outer cortex to carry supplemental wire suture.
 - Oblique drill hole being made in proximal fragment to permit introduction of longitudinal pin.
 - Wire suture has been placed but not tied.
 - Longitudinal pin has been introduced through proximal fragment.
 - Reduction has been accomplished. Pin driven home and wire suture tied.

believe the technique to be indicated only in fractures of the anterior two-thirds of the jaw.

ILLUSTRATIVE CASE: Male, aged seventy-one. Oblique fracture of the right mandible about two and one-half inches posterior to the symphysis with marked displacement and overlap. This patient possesses no natural teeth in either upper or lower jaw. He has suffered additional fracture of the left acetabulum, and operation was not carried out for two weeks.

OPERATION: (Figure 3.) This technique is similar to that of the clavicle. Through a two inch incision in the line of and slightly below the mandible, the fractured area was exposed by sharp dissection, and the fractured surfaces were found to be oblique. With a three-thirty-seconds inch drill, an axial drill hole was made in each fragment near the lower border. About three-fourths inch from the fracture site in the proximal fragment, an oblique drill hole was made in the outer cortex of the bone to join the longitudinal drill hole previously made. The bone was then temporarily reconstructed and held with a tenaculum while an oblique drill hole was made through both fragments for the purpose of introducing a stainless steel wire suture. The oblique drill openings for the wire suture were directed through the outer cortex of the bone only so that the drill emerged in the fracture line. The suture of very fine stainless steel wire was placed but not tied. A longitudinal pin three-thirty-seconds inch in diameter and one and one-half inches in length made of Type 316 stainless steel was introduced into the axial drill hole by means of the oblique communicating opening which had been previously made in the proximal fragment. The bone appeared to be securely fixed by the passage of the pin without tendency to distraction. The wire suture was then twisted snugly to prevent possible distraction, and to assist in the control of rotation. It was then found that the bone was perfectly reconstructed and was secure. The wound was closed in layers with interrupted cotton throughout. His recovery was uneventful, and there was x-ray evidence of good union in eight weeks. He was permitted soft foods immediately after the operation, and the jaw was immobilized at no time following the operation.

In using any form of internal fixation upon the jaw, care should be exercised to keep the operative attack near the inferior border of

the mandible to avoid injury to the inferior alveolar nerve, which traverses the mental canal to supply the teeth.

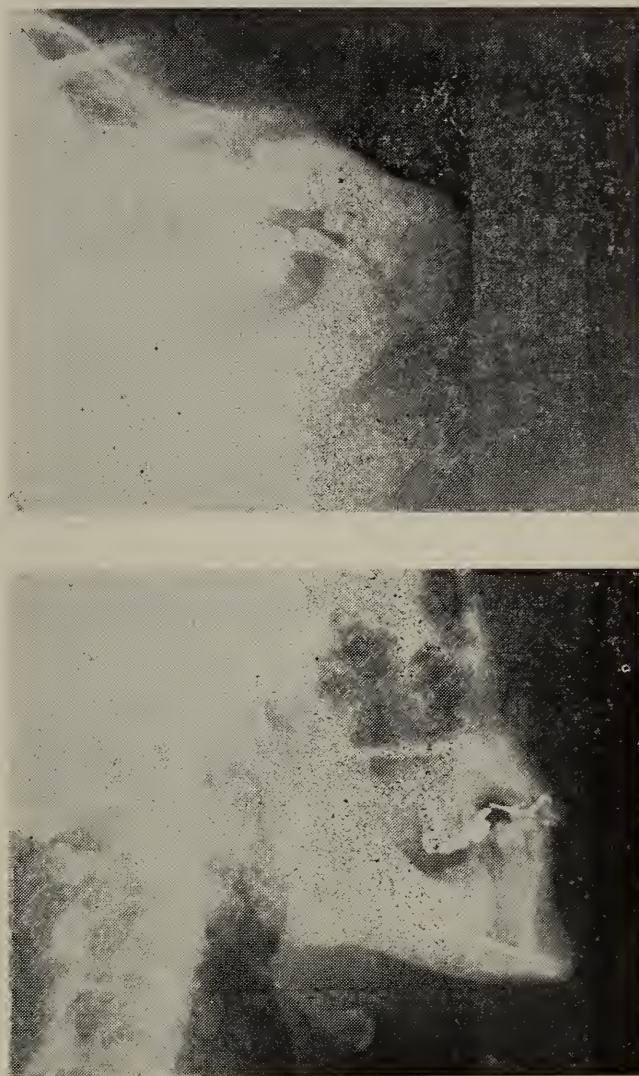


FIGURE 4

(a & b) X-rays showing fracture of the mandible before and after longitudinal pin fixation. The jaw was not immobilized.

COMMENT

In the other two jaw cases which were treated in this manner, the same technique was utilized, and the postoperative convalescence was uneventful. In both cases the jaw healed without deformity. In these other two cases, there were a few upper and lower teeth which were unsuited to inter-dental wiring, and in these cases, good dental occlusion resulted. Infection did not occur, and healing progressed normally.

Gordon Murray advocated blind Kirschner wire fixation of the clavicle in 1940² and again in 1945³, the use of Kirschner wire in fractures of the jaw and in other long bones. As

early as 1907, Lambotte⁴ of Belgium had used axial wire fixation of the clavicle.

CONCLUSIONS

1. Longitudinal pin fixation has been found to be of value in selected cases of fractures of the inferior maxilla and the clavicle.

2. The indications for neither procedure appear clear-cut at the present time.

3. A technique for longitudinal pin fixation of fractures of the clavicle and of the jaw has been described.

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Fundamentals of Management of Gastroduodenal Ulceration—Status of Vagotomy*

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Birmingham, Alabama

ULCERATION of the duodenum and ulceration of the stomach are two distinct entities from the clinical, pathological and management viewpoints. Duodenal ulcer occurs chiefly in the younger age groups and rarely undergoes malignant changes. The treatment of duodenal ulcer is primarily a medical problem and requires operation only when the symptoms are rendered intractable by complications. Gastric ulcer attacks people of an age group older than those affected by duodenal ulcer. It is often impossible to differentiate between a benign gastric ulcer and an ulcerating carcinoma. In contrast to ulceration of the duodenum, ulceration of the stomach is frequently malignant and any ulcer of the stomach must be considered a carcinoma until proved otherwise. The treatment of gastric ulcer is essentially a surgical problem.

Gastric Ulcer

The treatment of choice for gastric ulcer is partial gastrectomy and the results of this form of treatment are excellent. There is no problem in closing the duodenal stump and the occurrence of a gastrojejunal ulcer is exceedingly rare. If frozen section studies at the time of surgery reveal the gastric ulcer to be benign, the gastrectomy may not be as radical

as required in a duodenal ulcer. If the ulcer is found to be malignant, an ample resection of the stomach should be done along with excision of the gland-bearing areas in the omentum and the gastrocolic, gastrohepatic ligaments.

Indications for Operation

Ulcers which occur in the prepyloric area or along the greater curvature are immediate surgical problems. Reliable pathological studies of ulcers along the greater curvature of the stomach reveal that more than 90 per cent are found to be malignant at the operating table. Ulcers which occur in the prepyloric area are found to be malignant, as reported by various authors, in 20-40 per cent of the cases. In the remaining areas of the stomach, an ulcer should be given a trial on medical therapy for a period of three to four weeks. Recurrent gastric ulcers, and all gastric ulcers which persist in spite of an adequate trial of medical treatment, should be resected. Criteria of healing are failure of the roentgenologic or the gastroscopic examination to demonstrate an ulcer, complete subsidence of symptoms, and disappearance of blood from the stools. If the ulcer heals after a brief medical trial, the patient should be advised to report for re-examination at intervals of 60 to 90 days to be sure that the ulcer does not recur. It is important to remember that it is impossible

*Abstract of paper read before the Central Medical Society in Jackson, Mississippi, April 5, 1949.

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to differentiate a benign ulcer from a gastric carcinoma by x-ray examination, by gastroscopy, by analysis of clinical information, or even by gross examination of the ulcer at the time of the operation. This factor demands that the treatment of gastric ulcer be primarily surgical.

Selection of Operative Procedure

Gastric resection is the treatment of choice for all malignant ulcers and for benign ulcers which occur in the pylorus, antrum, pars media, or along the lesser curvature of the stomach. Malignant ulcers of the cardia can be removed best by transthoracic approach to the stomach followed by an anastomosis of the stomach to the esophagus. Simple excision of the ulcer must be carried out only when immediate frozen-section examination of the ulcer reveals it to be benign. Vagotomy is an undesirable operation in the management of gastric ulcers. The high incidence of cancer in gastric ulcer and the excellent results obtained from partial gastrectomy make a section of the vagus nerves an undersirable method of therapy for ulcerating lesions of the stomach.

Duodenal Ulcer

The vast majority of ulcers of the duodenum are easily managed by conservative medical management and only one out of ten patients with such ulcers require the attention of a surgeon. The indications for surgical treatment may be listed briefly as follows: (1) perforation, (2) bleeding, (3) obstruction, (4) intractable-type pain.

Perforation is one of the most serious complications of duodenal ulcer and requires immediate surgery. The operation of choice is simple closure of the perforation and the best result can be obtained with patients on whom the operation is instituted in the first six to eight hours following the perforation of the ulcer. A progressive increase in the mortality rate corresponds directly to the delay in the performance of surgical closure of the lesion.

Visick¹ has recently reported fair results in the management of acute perforation of the duodenum by continuous decompression of the stomach, extensive chemotherapy, heavy doses of antibiotics, and the administration of intravenous fluids and food. We have used this method of treatment on a number of cases on the charity service of the Hillman Hospital but the results have not been as satisfactory

as those obtained by an early surgical closure of the perforated duodenal ulcer.

An acute massive hemorrhage from a duodenal ulcer is a serious complication and demands careful judgment on the part of the clinician. The immediate treatment of these cases consists of the administration of morphine and large transfusions. If the bleeding persists after the patient has received 1000 to 15,000 cubic centimeters of blood and the patient is over 45 years of age, immediate exploration of the abdomen is considered. Walters² explains that the continuation of bleeding and the high mortality rate among patients in the older age group probably is due to the presence of arteriosclerosis and the difficulty of contraction and thrombosis is an eroded, thickened artery. In the elderly age group of patients, the mortality rate of conservative management is much higher than that of surgical interference. Conservative management serves its most useful function in younger patients.

The patient who has had an episode of mild or moderate bleeding should be placed on a carefully regulated medical program for a period of one year. If the ulcer fails to heal under this regime, the patient should be referred to the surgeon. A conservative medical program should never be carried beyond the second bout of bleeding. The risk to the patient is too great.

The average patient with pyloric obstruction associated with a duodenal ulcer can best be treated by partial gastrectomy following a careful preoperative preparation. In some patients with severe pyloric obstruction a gastroenterostomy is most useful, especially in the elderly patient with low gastric acids. In this group of patients it is extremely important to maintain a normal electrolytic balance both pre- and postoperatively.

Patients with duodenal ulcer who have intractable-type pain in spite of a controlled medical regime are entitled to surgical treatment in an effort to effect a return to normal active life. Such patients are most grateful after they have been relieved of their pain and have returned to their usual mode of living.

Vagotomy

Interest in the operation of vagotomy for peptic ulcer has become widespread since the revival of this procedure. The rationale for vagotomy is based on the conception that hypersecretion of gastric juice in the peptic

ulcer patient is very largely neurogenic in origin. In 1943, Dr. Dragstedt³ reintroduced the operation. He has demonstrated that division of the vagus nerves to the stomach will abolish the excessive continuous secretions of gastric juices and will reduce the gastric acid levels. The modern operation differs from the earlier procedure in that it is undoubtedly more complete and is performed only near the level of the diaphragm. The nerve may be sectioned just above the diaphragm (by transthoracic approach) or may be sectioned below the diaphragm (by transabdominal approach). The operation is relatively easy to perform and carries a low mortality rate. Anatomical studies by Miller and Davis⁴ demonstrate a marked variation in the distribution and course of the two branches of the vagus nerve that supply the stomach. It seems probable on the basis of present evidence that the section of the vagus must be complete and that recurrence or persistence of the symptoms may occur if a single branch of the vagus has been overlooked. In dogs, section of one of the vagus nerves has no effect on the volume, acidity, or the total output of acids in the gastric secretion. In man⁵, the persistence of a single fiber after resection of the two main nerve trunks of the vagus nerve permits the continued excessive night secretion characteristic of peptic ulcer patients.

The vagotomized patient should be followed in a systematic fashion and roentgenologic studies, gastric acid determinations and the insulin test should be performed at indicated intervals. The insulin test has proved itself to be a reliable test of the continuity of the vagus nerves.

The transabdominal approach is usually preferable to the transthoracic approach because it permits exploration of the contents of the abdomen, examination of the ulcer, and removal of the ulcer if it is thought to be advisable. In addition, the performance of a gastric drainage operation, such as gastroenterostomy, can be undertaken when indicated.

The transthoracic approach is especially desirable in the performance of a vagotomy for a proved recurrent gastrojejunal ulcer. This approach permits easy access to the lower end of the esophagus and ready identification of the nerve branches. It must be remembered that the pleural cavity apparently has less re-

sistance to contamination than the peritoneal cavity.

Favorable Features of Vagotomy

Relief of pain following vagotomy is dramatic and almost universal. Patients with severe intractable-type pain often experience relief as soon as they recover from the effects of the anesthesia. These patients display a progressive gain in weight and show an improvement in their outlook on life. In patients with bleeding duodenal ulcer the incidence of recurrence of hemorrhage is very low. Immediate post-operative studies reveal a reduction of the gastric secretion volume to approximately one-half its former value and free hydrochloric acid will usually fall to a zero-degree level.

Unfavorable Features of Vagotomy

The complaint of epigastric fullness is quite common and is often associated with nausea and vomiting. X-ray studies reveal a large dilated stomach with a marked decrease in its motility. Gastric retention is frequent in the first few months following vagotomy and approximately 15 per cent of the cases will require additional drainage operative procedures. This difficulty has led many surgeons to execute at the time of the vagotomy a drainage procedure such as a gastro-enterostomy or a pyloroplasty.

Changes of acidity have been variable, but usually acidity of fasting gastric content and response to histamine or insulin hypoglycemia have been reduced. There is evidence that some but not all of these variations may be caused by incomplete vagotomy. Recurrent active duodenal ulcers have been reported, in spite of a negative insulin response, following vagotomy. Recurrent bleeding and perforation have also been noted following this procedure. Diarrhea following interruption of the vagus nerve is seen often.

Present Status of Vagotomy

The operation of gastric neurectomy must be considered to be in the investigative stage and the effects of the operation should be carefully studied. It is essential that these patients be kept under observation for extended periods of time in order to properly evaluate the problem.

Vagotomy is contraindicated in the treatment of gastric ulcer because of the high incidence of malignant ulcers of the stomach and because excellent results are obtained by partial gastrectomy.

The greatest field of usefulness for vagotomy seems to be in the treatment of ulcers after partial gastrectomy and in certain cases of non-obstructive duodenal ulcers in which the cephalic phase of gastric secretion is marked and the pain is intractable. If the operation is used in the treatment of gastrojejunal ulceration after gastro-enterostomy, the possibility of obstruction at the stoma and at the site of the healed or reactivated duodenal ulcer must be considered. The results of vagotomy in combination with drainage operations, such as gastro-enterostomy and pyloroplasty, are encouraging in the treatment of duodenal ulcer. Vagotomy is in the experimental stage and needs further evaluation. Partial gastrectomy, removing two-thirds to three-fourths of the stomach, remains the operation of choice in the treatment of duodenal ulceration.

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THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY POST-CLINICAL TOUR

The New Orleans Graduate Medical Assembly is sponsoring an interesting post-clinical tour to follow the 1950 meeting in New Orleans. On Saturday, March 11, a party composed of doctors and their wives will leave by plane for San Juan, Puerto Rico. The itinerary will also include the Virgin Islands; Ciudad Trujillo, Dominican Republic; Kingston and Montego Bay, Jamaica and Havana.

Medical programs and visits to hospitals have been arranged and the trip also includes a full schedule of sightseeing. World famous resort hotels are reserved for the group on the entire tour—to name a few, the Condado Beach Hotel in San Juan, Hotel Jaragua in Ciudad Trujillo, Myrtlebank and Tower Isle Hotels in Jamaica and the Hotel Nacional in Havana.

Departure from New Orleans will be on Saturday, March 11 and the party will return on Sunday, March 26.

Details and a complete itinerary are available at the office of the Assembly, Room 105, 1430 Tulane Avenue, New Orleans 12, Louisiana.

The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

FOUR-YEAR MEDICAL SCHOOL

For almost a half century our state has had a two-year medical school that has been up to standard and has served well. The two-year schools are on the way out and we face being denied much aid in scientific advance in our state, particularly through Oak Ridge where the saving qualities of the atom bomb are being investigated with the cooperation of the medical schools of the Southern states. Our state is handicapped because we do not have a four-year school.

With one of the finest systems of hospitals in the entire nation fast being realized in the state, the time is past due for a medical school and central hospital. Jackson has the finest location in the South for such a set-up. Mississippi has the very best young men who want to study medicine, many on the waiting list. Medically speaking we have been renting,

working on the halves and transporting ourselves by taxi. We are not that poor now. Mississippi boasts the best system of arterial roads in the nation, the best system of junior colleges forming the headstone of our public education, the best public health service in the nation, second highest production in cotton, third in timber, first in pecan, tung oil, pulpwood, and shipbuilding. About eight million dollars per year are coming to our state from oil production. The time is now at hand and the need is urgent for Mississippi to get on the way with a four-year medical school.

Mississippi can stand on the experience of the past in medical education and observe the needs of service to the people and the relation of the medical school to the deliverance of this service. We can easily have the most practical medical school for the practitioner in this nation. Also on this foundation, plus the knowledge and the wisdom of Dr. Felix J. Underwood, we can have the best school in this country for training public health doctors and nurses and technicians.

The house of delegates of our state medical association voted over and over a hundred per cent for a four-year medical school, the service clubs of the state have gone on record for it, ninety per cent of the people want this institution and now our great, safe and wise governor has come out unreservedly for it. Let us go forward without further delay. The medical school of the future must be the heart and the soul and the driving power of medical service to all the people.

FIRST H-B HOSPITAL OPENS

The opening of the Northeast Mississippi Hospital at Booneville on December 1 marks a new era in hospital progress in this state. It is the first to open built under the Hill-Burton Act. Three thousand people, estimated, witnessed the opening. Governor Wright, Mr. J. O. Slaughter, chairman of the Hospital Commission, and Dr. Henry Boswell were the guest speakers, Dr. Boswell bringing the dedicatory address and doing the job exceedingly well. The local sponsors for the hospital include the county, the town and the old hospital boards.

The hospital is constructed for one hundred beds, fifty having been finished. More than six hundred thousand dollars have been put into the institution. A nurses training school is contemplated. Since the strength of the nation is in the health of its people, institutions like this promise to be great means in carry-

ing medical service out to all the people. It is hoped that interns may be available for the institution a bit later and that it may be a means of bringing refresher courses to doctors of the community. The local people are proud of this institution and will do all they can to use it to the best advantage of the sick and in building health assets for all.

News and Comment

A FAR-REACHING HEALTH PLAN

What is perhaps a signpost toward future contracts between employers and labor unions can be seen in the agreement just reached between Sharp and Dohme, Inc., and the United Chemical Workers, CIO.

That contract provides a comprehensive health plan for the 3,000 employes and their dependents. It includes hospitalization, surgical benefits, doctors' fees for both home and office calls, and diagnostic laboratory fees outside the hospital. Cost of the plan will be shared by the company and the employes. No worker pays more than \$3 a month.

Handled through the Blue Cross and an insurance company, the plan is also a marked improvement over the hit-or-miss scheme used by the Mine Workers. This contract indicates the direction of far-sighted thought by both employer and union.

The greatness of America is based on a free competitive system of enterprise. Under this system, in the health field we have Blue Cross and Blue Shield as non-profit organizations and the commercial carriers.

Competition between these organizations guarantees to the consumer an economical health package.

Too many citizens today want the federal government to take all the responsibility for their welfare, forgetting that each one is paying a tremendous bill in taxes for something he is told he is receiving for nothing.

INTERNATIONAL AND FOURTH AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

May 14-19, 1950, Hotel Statler, New York City

All inquiries pertaining to the meeting should be addressed to the Chairman of the International and Fourth American Congress on Obstetrics and Gynecology, Dr. Fred L. Adair, at 24 West Ohio Street, Chicago 10, Illinois. Registration \$10.00.

WORKMEN'S COMPENSATION LAW

J. T. WEEKS, M.D.

Jackson, Miss.

The administration of the Workmen's Compensation Law, in the short time it has been in operation, has proved to be of great benefit to both the employee and the employer.

Under the old system, the injured, in addition to his physical disability, often had to wait weeks—and sometimes months—without financial aid, while his case was being fought through the courts. As a rule, not much was left for him after all fees were deducted. The doctor stood about a 50-50 chance to collect for his services. Such is not the case any more.

Before the Workmen's Compensation Law became effective, doctors were ordered into court to testify in most industrial accident cases. Doctors are seldom asked to testify under the present system. Practically all claims are adjusted after a close study and evaluation of the doctor's report.

When a settlement which the Commissioners believe to be fair cannot be agreed upon between the injured and employer, the case is controverted, and a full hearing before the Commission is scheduled. In some of these cases it is necessary to ask the doctor to testify in an effort to clear up doubtful points. These hearings are conducted in the manner of an informative round-table discussion. No fan-fare or jockeying for position in these hearings—just an honest to God effort to get the information which will enable the Commissioners to arrive at a fair and just decision. The use by non-medical men of a medical dictionary and a book on gynecology, in an effort to draft a trick question, has no place in these hearings.

The basis for adjustments of claims is determined by what the Commissioners believe to be the honest and unprejudiced report or testimony given by the doctors who treat these cases. This is as it should be. The doctor is, in fact, the doctor in this connection. His conscientious report and testimony is the giving of his knowledge in a desire to speed justice. This places upon the medical profession another important responsibility. History has no record of the medical profession shirking duty.

In most instances their cooperation has been wholehearted in an effort to aid the Commission in a just decision. Once they fully realize the important place they occupy in the fair administration of this law, the cooperation will be near the 100 per cent mark.

AMERICAN COLLEGE OF PHYSICIANS

The regional meeting of the Mississippi members of the American College of Physicians was held in Jackson at the Heidelberg Hotel, Saturday, October 8, 1949. The meeting was a most successful one and well attended. Eighteen of the twenty-two Mississippi members of the College attended and in addition there were members of the College from Arkansas, Tennessee, and Louisiana, and invited guests.

The scientific program which was presented during the afternoon was as follows:

The Internist's Responsibility for the Elderly Surgical Patient—W. K. Purks, M.D., Vicksburg, Miss.

Coarctation of Aorta With Report of Two Cases Operated Successfully—Gayden Ward, M.D., George Harvey, Jr., M.D., (by invitation), Jackson, Miss.

Prognosis of Heart Disease—Ben R. Heninger, M.D., Gulfport, Miss.

Management of Congestive Heart Failure—Samuel Nadler, M.D., Associate Professor of Clinical Medicine, Tulane University, New Orleans, La.

Psychosomatic Medicine—James F. Lewis, M.D., Columbus, Miss.

Amyloid Disease—Douglas D. Baugh, M.D., Columbus, Miss.

Lower Nephron Nephrosis (Acute Renal Failure)—Wesley W. Lake, M.D., Pass Christian, Miss.

The Problem of Hypersplenism—Roy Kracke, M.D. (by invitation), Dean, Medical College of Alabama, Birmingham, Ala.

The meeting was concluded with a social hour followed with a banquet for the doctors and their wives and was enjoyed by all. The guest speaker at the banquet was Honorable Alex McKeigney who talked on progress in Mississippi.

SOUTHEASTERN HOSPITAL CONFERENCE

The Southeastern Hospital Conference will hold its 1950 sessions at beautiful St. Petersburg, Florida, on April 5, 6, and 7, with the activities centering around the Soreno and Vinoy Park Hotels and the Municipal Pier.

Dr. Frank Groner of Memphis and his committee are planning the best program possible, and the details of this program will be furnished later.

A special program of events will be held in St. Petersburg during the time of the meeting.

NORTHEAST MISSISSIPPI MEDICAL SOCIETY

The last quarterly meeting of the year of the Northeast Medical Society was highlighted by Dr. Randolph Batson of Vanderbilt University as guest essayist, greetings from President O'Mara, and a fine banquet given by the T-K-E Drug Company. Dr. M. Q. Ewing of Amory and Dr. W. R. Armstrong of Tupelo will succeed the outgoing president and secretary, Dr. A. E. Brown of Columbus and Dr. R. L. Wyatt of Holly Springs.

FOUR-YEAR MEDICAL SCHOOL COMMITTEE

Dr. B. B. O'Mara, president of the Mississippi State Medical Association, has appointed the following committee to represent the state organization as the Four-Year Medical School Committee: Drs. B. S. Guyton, Frank Acree, E. R. Nobles, Gus Street, W. H. Anderson, Henry Boswell. Drs. Felix J. Underwood and B. B. O'Mara will meet with the committee as ex officio members.

ANNOUNCEMENTS

President B. B. O'Mara has appointed the following members to serve on the advisory committee for Heart Disease Control: Dr. T. E. Wilson, Jr., Jackson, chairman; Dr. A. L. Gray, Jackson, vice-chairman; Dr. Lawrence Clark, Vicksburg; Dr. W. W. Lake, Pass Christian; Dr. D. D. Baugh, Columbus; Dr. Harvey Garrison, Jr., Jackson; Dr. F. M. Sandifer, Jr., Greenwood; Dr. W. K. Purks, Vicksburg; Dr. Felix Underwood, Jackson, and Dr. B. B. O'Mara, Biloxi, officio members.

At the 1949 Convocation of the American College of Surgeons, the following new fellows were admitted from Mississippi: Sherman L. Allis, Jackson; George F. Archer, Greenville; Thomas H. Blake, Jackson; James L. Gardner, Biloxi; Robert D. Kirk, Tupelo and John G. Marsh, Greenville.

With the Fifty-Year Club

About seventy-five men have been delivered certificates of membership in the Fifty-Year Club. Dr. Lancelot Longstreet Minor received his on October 23 in the beautiful little family memorial Methodist Church near his home, the church having been given the community by him and his brother. It was a wonderful meeting, surely among the very best we have

had anywhere anytime. The church (near Herando) and churchyard overflowed with fine people who came from far and near to pay deserved tribute to the worth of Dr. Minor. A number of ministers and physicians further emphasized the esteem in which he is held.

This state has but few men in the medical profession or out who have such a fine background of ancestry as has Doctor Minor, so outstanding in the field of law, medicine, education, and war. His grandfather, William T. Minor, fought in the War of 1812, a brother was professor of law in the University of Virginia and another was professor of law in William and Mary College. His father's mother was Miss Fannie Washington of Virginia. Dr. Henry Minor, father of Dr. L. L., was a surgeon in the War Between the States. He remained with his men who were captured at Gettysburg, later was exchanged and when the surrender came walked from Appomattox to Macon, Mississippi. He married Miss Dent, a niece of General Longstreet. He served as president of the Mississippi State Medical Association in 1900-1901, forty-nine years ago. Mrs. Minor possesses an equally fine family background. Before her marriage, she was Miss Louise D. Bragg, of the General Bragg family and also related to the distinguished Starres family.

The L. L. Minors have one son and one daughter and four grandchildren.

Dr. Minor was born in Macon May 12, 1876. He attended Mississippi Agricultural and Mechanical College, Lyle University in Alabama, and graduated in medicine from the University of Tennessee in 1899. He has been very prominent in organized medicine. He served on the council of the Mississippi State Medical Association for many years and served exceedingly well. He has made excellent contributions to this and other journals. He has served for years as secretary of his local society, been president of his district society, and served on the draft board in both world wars. One of the most versatile men we have in the state, he possesses native ability, a fine diplomacy, is kind in heart and just in his dealings. To know Dr. L. L. Minor is to love, trust and appreciate him.

The meeting in his little home church will always impress and mirror to us his greatness.

DEATHS

DR. I. N. TUCKER

Funeral services were held Monday October at 2:30 p.m. from Webb Funeral home in Meridian for Dr. Ireanum N. Tucker, 57, former Meridianite and brother of Dr. J. D. Tucker of Meridian, who died at his home in Racine, Wisconsin, as the result of a heart ailment.

Dr. Tucker attended Beason College in Meridian and later the University of Mississippi and Tulane. He served as a captain in World War I.

He leaves his wife, Mrs. Evelyn Spurl Tucker; daughter, Mary Evelyn Tucker and two sons, Dr. I. N. Tucker, Jr., and Charles Spurl Tucker; brother, Dr. J. D. Tucker of Meridian.

DR. R. T. BONNEY

The funeral services of Dr. R. T. Bonney were held at the home of his parents, Mr. and Mrs. Robert Bonney of Enterprise, October 12. He was thirty-three.

Dr. Bonney was a member of the South Highland Presbyterian church of Birmingham, having recently transferred his membership from the Enterprise church.

He was graduated from Mississippi State College of Starkville, and the Tulane School of Medicine, New Orleans. He served overseas in the U. S. Army General Hospital during the war. Returning to Birmingham in 1947, he began the practice of his profession with the medical staff of the TCI corporation.

Dr. Bonney is survived by his wife, Mrs. Mallie White Bonney, Birmingham; parents, brother, Dan, grandmother, Mrs. Evans Bonney; and other close relatives of Enterprise and Birmingham.

DR. WILLIAM AINSWORTH

Services for Dr. William Lott Ainsworth, resident urologist at the University of Virginia Hospital who died there October 23, were held in Bay Springs. Dr. Ainsworth was 32.

He was graduated from Millsaps College at Jackson and Emory and interned at the University of Virginia. He was a veteran.

Dr. Ainsworth leaves his wife; a son, David Jeffery Ainsworth; his mother, Mrs. Ella Lott Ainsworth of Bay Springs; a brother, Dr. Temple Ainsworth of Jackson, and a sister, Mrs. W. H. Merrell of Jackson.

DR. G. C. KIRBY

Services for Dr. Grover Cleveland Kirby of Darling, who died November 2 in a Little Rock, Arkansas, Hospital were held the following day there.

Dr. Kirby was born at Carrolton, Miss., in 1889. He is a graduate cum laude of both University of Mississippi Medical School and of Tulane University. After serving his internship he practiced medicine in Tutwiler before moving to Darling where he has been for the past 20 years. He served with the Army in World War I and tried to volunteer for World War II but his age kept him out. After World War I he remained for some time with the Veterans Administration. He once was a doctor in a C. C. C. Camp.

He leaves one son, Dr. James Martin Kirby of Little Rock, two brothers, Dr. Carl Kirby of Lula and Buddy Bob Kirby of Money, two sisters Mrs. Rudolph Bernando and Mrs. D. Cowan of Money.

DR. FRANK HOLLOMAN

Dr. Frank Holloman, 71, beloved physician of Morgan City, passed away at his home September 29.

Dr. Holloman was born at Long Moss Plantation near Canton on March 17, 1878. He was the son of the late Rev. Thomas Bascom Holloman and Mollie Holliday Holloman.

During his long and useful career he had practiced medicine at Pickens, Itta Bena and Morgan City, serving in his profession for 44 years, the last 26 being at Morgan City. He attended Millsaps College, Jackson and Emory and Henry University of Tennessee School of Medicine at Memphis. He was active in civic and religious undertakings and a member of the Presbyterian church.

Survivors are his widow, Mrs. Sara Bradley Holloman of Morgan City and four daughters: Mrs. Hoyt T. Holland, Jackson; Mrs. M. C. Davis, Money; Mrs. Frances Mathews, Corinth and Mrs. J. C. Love, Blackburg, Va., also three brothers: Dr. T. B. Holloman, Passfield; J. H. Holloman, Ruleville, and L. C. Holloman, Memphis, and two sisters, Mrs. Mary H. Scott and Mrs. Stella H. Robertson, both of Itta Bena.

DR. R. E. PRIEST

Dr. Rufus Elmer Priest, who has served Yalobusha County as part-time Health Officer for the past several months, died at his home in Oxford October 29 of a heart attack. He was 60.

Director of the Lafayette County health unit for the past seven years, Dr. Priest, before entering the public health work, was engaged in private practice of medicine at Houston.

In recent months, Dr. Priest had brought to successful completion the plans for the erection of a \$35,000 Lafayette County Health Center in Oxford, a project upon which he had worked for many years.

DR. H. B. SUTHERLAND

Dr. Hayden Bonnell Sutherland, practicing physician of Booneville since 1932, died at his home October 31 of a heart attack. He was 44.

Services were held the following afternoon at the Methodist Church, with the Rev. W. M. Jones officiating. McMillan and Son Funeral Home in charge.

Dr. Sutherland had been active up to his death, with relatives reporting that he had made a call on a patient the night before his death.

Dr. Sutherland was born in Itawamba County in 1905 and moved to Prentiss County that same year. Here he spent the remainder of his life, except for the time spent in school. He studied at the University of Mississippi and then finished his training at the University of Louisville in Kentucky.

He started his practice in Booneville in 1932 in the clinic of his father, Dr. W. H. Sutherland. He was a member of the American Diabetic Association, being one of the first in Mississippi to join this organization. He also was a Mason.

He leaves his wife; two daughters, Barbara Lou and Kay; a son, William Hayden; his parents, Dr. and Mrs. W. H. Sutherland; a brother, L. H. Sutherland of Booneville, and five sisters, Mrs. Dewey Pippin, Mrs. Bill McGill and Mrs. K. E. Floyd of Booneville, Mrs. Bernard Patrick of Corinth and Mrs. J. O. Bronson of Memphis.

BOOK REVIEWS

400 Years of a Doctor's Life, by George Rosen, M.D., and Beate Caspari Rosen, M.D. Published by Henry Schuman, N. Y. Price \$5.00.

This book is unusual in that the role of doctor and patient is reversed. In this book you the patient examine the doctor. The

material was selected from medical autobiography.

More than eighty doctors who have made their rounds in many countries during the last four hundred years, are Otto Heubner, Alfred E. Hoche, Samuel D. Gross, Richard Dewey, Segmund Frend, Walter B. Cannon, Benjamin Rush, James Hinton and many others.

Quotation from Sigmund Freud "And one day I had an experience which showed me in the crudest light what I had long suspected. One of my most acquiescent patients with whom hypnosis had enabled me to bring about the most marvelous results, and whom I was engaged in relieving of her suffering by tracing back her attacks of pain to their origins, as she woke up on one occasion, threw her arms around my neck. The unexpected entrance of a servant relieved us from a painful discussion, but from that time onward there was a tacit understanding between us that hypnotic treatment should be discontinued."

Quotation from Carney P. McCord: "In those days to enter the field of industrial health conservation carried with it the penalty of being shorn of a few of the outer garments of medical respectability . . . To a few of us however there was given the boon of prescience—the foresight of the country's tremendous industrial expansion, the concurrent ripe in occupational diseases. So girdled, the sneering of the majority was not minded. The zealot never minds."

The authors—George Rasen is a graduate of the City College in New York. He studied medicine in Berlin. His wife, Beate Caspan Rasen received her M.D. degree in 1935 from the Medical faculty of the University of Berlin.

Aesculapius Comes to the Colonies, by Maurill Bear Gordon, M.D. Published by Ventnor Publishers, Inc., Ventnor, N. J. Price \$10.00.

This book deals with the history of medicine in the thirteen colonies, written in a fascinating manner. Doctors in those days were everything from barbers to statesmen. Five physicians signed the Declaration of Independence.

Many original quotations from colonial documents are given. These show the wonderful progress that medicine has made. Many criticisms of medicine are quoted from newspaper articles and advertisements.

Drugs and their administration were odd then compared to our modern wonders. Weird rituals were resorted to when drugs failed.

Every person interested in medicine should read this book. Each character seems alive.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson

Otolaryngology—Charles R. Hume

Ophthalmology—Edley Jones, Vicksburg

Obstetrics and Gynecology—J. F. Lucas, Greenwood.

Orthopedics—Thomas H. Blake, Jackson.

Public Health—Felix J. Underwood, Jackson.

Pediatrics—Harvey F. Garrison, Jackson.

Radiology and Roentgenology—Karl O. Stingily, Meridian.

Pathology—R. M. Moore, Vicksburg, Miss

Surgery—W. H. Parsons, Vicksburg.

Urology—Temple Ainsworth, Jackson.

PEDIATRICS

PREVENTION AND TREATMENT OF PRENATAL SYPHILIS — Norman R. Ingraham, University of Pennsylvania, Philadelphia, Pa., *Am. J. Med.* 5:693-701, November 1948.

"Penicillin is effective in the prevention and treatment of congenital syphilis and except perhaps for interstitial keratitis may completely replace other forms of specific therapy. It is of greatest value in this field when given to the mother either prior to conception or in the early months of pregnancy, and can cure the fetus in utero if the disease is not too far advanced. A total dose of 2.4 million units (40,000 units every three hours for sixty injections) of aqueous penicillin in hospitalized pregnant women is sufficient virtually to insure the birth of a nonsyphilitic infant. Somewhat higher total dose may be desirable to effect cure in the mother. Ambulatory treatment with a slowly absorbed penicillin preparation, 600,000 units once daily for eight days, is practical and produces about the same results as aqueous penicillin. This treatment of the pregnant woman is apparently effective in all stages of syphilis and at almost any time in pregnancy. There is some evidence that women who have received adequate penicillin treatment may need no specific treatment during pregnancy. It is still too soon, nonetheless, to withhold treatment under average circumstances of routine handling during subsequent pregnancies in women who have had syphilis. The response of the syphilitic infant to penicillin therapy depends largely upon the age and physical status at the time treatment is given.

If the infant is debilitated or the victim of intercurrent infection, hospitalization and expert pediatric care are desirable. In surviving infants the cure rate approaches 100 per cent if treatment is started in the first four months. Failure of serologic response is common if treatment is delayed for six months to two years but infectious relapse is rare. Recommended total dosage of aqueous penicillin has varied between 18,000 and 98,000 units per pound of body weight given every three hours in one hundred and twenty divided doses over a period of fifteen days. The meager available information indicates that penicillin therapy of late congenital syphilis is at least as effective as other types of treatment previously employed. As would be expected, the serologic response is slow and uncertain in spite of satisfactory clinical improvement. Adult dosage totaling 10 million units or more over a period of fifteen days should be used in congenital neurosyphilis. Best results are obtained in interstitial keratitis when fever therapy is used in conjunction with penicillin."

COMMENT: The abstract of the subject mentioned above should be of interest to all physicians in Mississippi at this time. This is the kind of treatment that any physician can administer, and there is no excuse for any of allowing this condition to prevail without treatment.

SURGERY

Edward Sattenspiel: CYTOLOGIC DIAGNOSIS OF CANCER IN TRANSUDATES AND EXUDATES. *S. G. O.* 89:478, 1949 (Oct.).

The earliest significant advance in attempts at diagnosing cancer from study of smears of ascitic fluid came in 1895 with the publication of Bahrenberg. Mandelbaum, Zemansky, Foot, Schlesinger and Honigan continued the work and published series of cases with additional diagnostic criteria. With the publication of the monograph on the diagnosis of cancer from the vaginal smear by Papanicolaou and Traut in 1943, vast new horizons opened up in the field of cytology, and in the past few years almost every conceivable body fluid has been investigated for malignancy. The development of the Papanicolaou technique is the most important milestone in this work—cell size and sharp cell outline are preserved;

smears stain more satisfactorily; nuclear characteristics are defined more accurately; and individual cells in thick smears can be better differentiated.

Modification of technique used by the author in preparing ascitic and pleural fluids suspected of containing malignant cells are as follows: 1) collection of effusion and immediately centrifuging without half and half admixture with alcohol; 2) direct smear of any coagulum in the field; 3) immediate refrigeration alone if immediate examination is not feasible; 4) addition of ascetic acid to bloody fluid.

Because the author's study was initiated recently only a small series of cases has been gathered. However, results have been conclusive and compare favorably with previously reported percentages by the paraffin block method. Every specimen of fluid examined by the Papanicolaou method also had simultaneous paraffin blocking, sectioning and staining with hematoxylin and eosin. A total of 17 cases of suspected malignant effusions were received; 5 pleural and 11 abdominal. Nine positive diagnoses were made, all adenocarcinoma, and eight negative slides reported. Five of the nine positive cases have been confirmed by operation and biopsy while the remaining four are alive with very positive clinical evidence of malignancy. Of the eight negative cases there were three with pleural effusion on the basis of tuberculosis or undetermined etiology, one lymphosarcoma, one retroperitoneal sarcoma, one case of adenocarcinoma of the stomach and two cases of cirrhosis of the liver.

The relative advantages and disadvantages of the paraffin block technique and the Papanicolaou technique are listed.

VA PATHOLOGY

Present Illness: A white male, age 25, was admitted to the Station Hospital, April 29, complaining of weakness, profuse perspiration, loss of appetite and vertigo, with onset the day before admission.

Past History: As a child he had measles, mumps, and chickenpox. Eight years before a horse had stepped on his right foot, but there had apparently been no immediate sequelae. He had noted weakness and inability to raise the toes of his right foot off the ground for one year.

Physical Examination: The skin was deeply pigmented. Heart, lungs, and abdomen were essentially negative. Blood pressure 72/60 and 98/56. There was a right foot drop with slapping gait. The toes could not be raised when the heel was on the floor, but reflexes were normal and no pathologic reflexes were elicited.

Laboratory Data: The urine contained a few leukocytes. The red blood count was 2.95 million and the hemoglobin was 70 per cent. Later the values rose to 3.9 million and 85 per cent and on discharge the red blood count was 5.25 million. Kahn was negative. X-ray of chest was negative. EKG showed an inverted P4 and an elevated ST Segment in lead 3.

Course: Beginning May 2, he received 1 cc. of adrenal cortical extract daily and his blood pressure rose to 110/80. He was discharged from the hospital in June.

He was re-admitted in the early morning of November 14. During the interval his skin had become darker, although strength was apparently well maintained. He was admitted complaining of extreme weakness and profuse sweating. He had a cold and had been very weak for two days and the night before could not get out of bed.

Physical examination on admission showed the pigmentation to be especially marked over the face, neck, and dorsum of the hands. The skin was cold and clammy. A few fine rales were heard in the lungs, the blood pressure was 90/65. The abdomen was flabby.

He became extremely weak and had difficulty in breathing. Temperature was 99.6; pulse was 80. There was twitching of the facial muscles and the heart sounds were very weak. He died suddenly about half-an-hour after being transferred to the hospital.

State Board of Health

Felix J. Underwood, M.D.

LEADING CAUSES OF DEATH

by

R. N. WHITFIELD, M.D.

Director of Vital Statistics

Vital statistics records reflect interesting trends in the ten leading causes of death during the present century. As circumstances and conditions change through the years, these leading causes have shifted from one place to another and a few have disappeared from the list altogether, thanks to the preventive measures taken to combat communicable diseases and the new scientific advances which made possible better health protection. Thirty-five years ago, and even 25 years ago, tuberculosis was the leading cause of death in Mississippi. A total of 2,500 died of this disease in 1914; 1500 died of pneumonia, and pellagra caused 1200 deaths in the state. There were over 1,000 deaths from malaria, and typhoid fever was rampant with 625 deaths and over 6,000 cases of the disease. Consider the following reductions of these diseases which took place during the 35-year period between 1914 and 1948:

Tuberculosis — from 2,500 deaths to 668

Pneumonia — from 1,500 deaths to 676

Pellagra — from 1,200 deaths to 30

Malaria — from 1,030 deaths to 12

Typhoid Fever - from 625 deaths to 2

The reduction of these diseases has meant real public health progress, yet when faced with the ten leading causes of death today it is realized that the victory over preventive disease is far from being won and that a real job lies ahead for everyone before the present picture can be substantially changed.

Far out in front in today's leading cause of death is heart disease. Second from top is cancer, followed by apoplexy, nephritis, and accidents. These four diseases and accidents caused more than half the deaths which occurred in Mississippi last year. Heart disease alone produced more than one-fifth of all the deaths in the state. In the United States two years ago heart disease lacked just a small

fraction of killing one person out of every three who died.

Heart disease deaths in Mississippi have tripled since 1915—from 1,471 in 1914 to 4,339 in 1948. Cancer deaths have more than tripled, having increased from 553 to 1,906. Accident deaths have also more than tripled—from 431 to 1,390. Apoplexy has increased about 64 per cent in the last twenty-five years, and nephritis has increased 27 per cent.

What is to be done to lessen the fearful toll from five causes of death which kill more than half the people who die at the present time? This all-important question is engaging the interest and attention of many outstanding physicians, public health workers, and researchers, but the answer does not seem to be in sight for many aspects of the problems involved. But many of these deaths are preventable and for these something can be done.

Consider deaths due to accidents. Most of them are preventable, yet accidents constitute the leading cause of death from one to thirty-five years of age. Nearly one-third of all accidental deaths in Mississippi last year occurred between ages 15 and 35. Deaths from accidents were twice as many as deaths from tuberculosis. The automobile was responsible for the most of the accidents with a death toll of 430 plus eleven others from collisions between autos and trains. Considering the innumerable factors responsible for accidents—psychological factors ("accident-proneness"), excessive use of alcohol, and sheer carelessness—it is obvious that their reduction calls for concerted action on the part of the entire population.

It is hard to determine just how many cancer deaths might be prevented if early diagnosis and prompt medical attention were sought but unquestionably many lives could be saved from this dread condition. The educational program of the American Cancer Society and its local divisions, together with the operation of cancer clinics are helping to make progress in this field. The vast amount of research being done

to discover better methods of combatting cancer gives further hope.

Heart disease presents us with the biggest problem at this time and is deserving of more attention than it has received. In contrast to 6 deaths from poliomyelitis in the state last year, 4,339 citizens died of heart disease.

It is said that there is more heart disease because many more people are now escaping infections which used to cause early death and are living much longer. However, only three years ago over 40,000 people in the United States between 20 and 50 years of age died of heart conditions. These were young people! Even at 60, a person should not be considered old. Yet 69,500 people died who were between 50 and 60. Therefore, in 1946 one observes that 110,000 deaths occurred from heart disease in people between 20 and 60 years of age—in the prime of life, so to speak. Of course the toll becomes higher as age advances, because the causes have longer to operate. But what are the causes?

Those causes which were said to result in heart affections have been greatly mitigated. Then there must be some answer, some logical reason why one-third of the deaths of this country are due to failing hearts. The complexities of modern-day living with its rapid transportation, its pressures and demands upon the individual taxes the heart beyond its normal capacity. Gone with the horse-drawn carriage are the leisure and the closely-integrated family unit of a few decades ago. In their place are new customs, a feeling of urgency in living, a changed state of society in general. It is my opinion that the human heart was not created to withstand the strain of present-day living, with its state of hurry,

haste, and tension. The old rule of eight hours work, eight hours relaxation, and eight hours sleep needs to be more widely observed. Half of the heart disease deaths at this time are statedly due to disease of the heart muscle (chronic myocarditis). My contention is that a heavy portion of these fatalities are due to hearts overworked.

Further proof that hurry and noise and strain and loss of sleep are significant factors in heart failures may be noted in the urban and rural mortality figures. In our two largest cities, Chicago and New York, two years ago 40 per cent of all deaths of their population were ascribed to heart disease, while in Mississippi, the most rural state, the figure was only 21 per cent. This seems an indictment against living in a large city. However, poor habits, overeating, lack of rest and relaxation prevail in the country as well as in the city. There is need for public understanding of the problems involved in fighting heart disease and the medical and public health professions can be helpful in fulfilling this need.

There is hope for additional progress in the work being undertaken through the National Heart Program, for which Congress made available an appropriation in 1948 to be matched by the states. This program has a 3-fold goal: 1. Increased cardiovascular research. 2. Improvement and expansion of heart disease detection and diagnostic services. 3. Training workers both in the fields of research and matters relating to the diagnosis, prevention and treatment of heart diseases. Efforts will be intensified on every side to prevent those heart diseases that are preventable and thus prolong life for countless thousands of useful citizens.

Buy Christmas Seals



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NORTHEAST MISSISSIPPI AUXILIARY

At the beautiful spreading new home of Mrs. Luther McDougal in Tupelo, members of the Northeast Mississippi Auxiliary met December 6 for the annual Christmas meeting. The president, Mrs. James C. Green, presided, first presenting Mrs. George Davis and Mrs. Hall in a medley of piano and vocal Christmas selections.

Mrs. Augustus Street, president of the state organization, brought a particularly stimulating message on the importance of doctors' wives adopting an attitude of diligence in backing our state objectives of a four-year medical school and vocational nurses training, plus a studied attitude of improving public relations for the medical profession. This last point was made in view of the national campaign against compulsory health insurance.

At the business session members agreed to elect officers in December but defer the tenure of the outgoing officers through the March meeting.

With the assistance of the Tupelo members, the hostess served delicious pecan pie and coffee.

Dr. and Mrs. J. K. Avent rejoice over the arrival of their first grandchild, Ivan Kirl Bass, son of Mr. and Mrs. Ray Bass of Grenada. The baby made its advent early in November.

LOWNDES COUNTY MEDICAL AUXILIARY

With virtually the entire membership present, the November meeting of the Lowndes County Medical Auxiliary met at the Gilmer Hotel November 18 in Columbus. Dr. Virginia E. Lane had charge of the program, presenting Dr. C. C. Smith of Jackson as the guest speaker. Mr. Smith's talk emphasized the importance of finding tuberculosis infection early, in order to prevent the spread of this disease which holds seventh place as killer in the state, and first in young adulthood mortality tolls. He urged cooperative interest in the mobile x-ray units sent out by the State Board of Health for detecting the presence of the disease in its program of county-wide surveys.

Mrs. James F. Lewis, president of the auxiliary, presented Mrs. Augustus Street of Vicksburg, president of the state organization, who brought a most enlightening coverage of the agenda of the group this year. Mrs. W. H. Anderson of Booneville, president-elect, also brought greetings, urging active participation in the year's objectives and subscriptions to the Bulletin.

Hospital and Physician's SUPPLIES

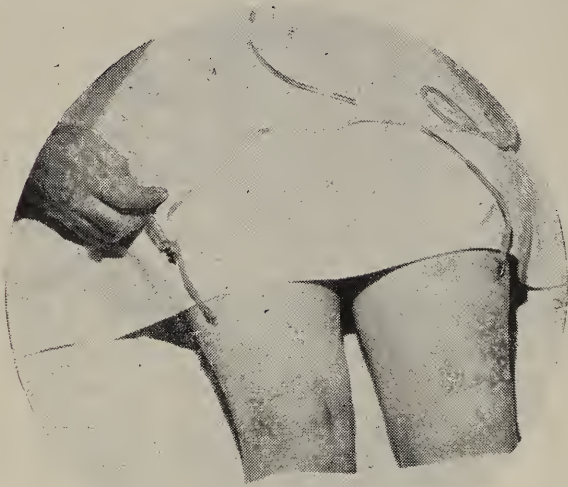
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Indications for Chemical and Surgical Interruption of the Sympathetic Pathways*

J. HARVEY JOHNSTON, JR., M.D.

Jackson, Miss.

SINCE ITS introduction at the turn of the century, surgery on the sympathetic nervous system has become well standardized. Temporary blocking of appropriate ganglia with novocaine provides important diagnostic and even therapeutic aid for many widely divergent diseases. It is usually possible to predict accurately from a diagnostic novocaine block or blocks what will be obtained by sympathetic surgery. Unfortunately, such prediction, while most desirable, is not possible in hypertension. Originally the various sympathectomies were considered quite difficult to do. This is certainly no longer true and in the hands of general and neurosurgeons with training in this specific field, mortality is negligible and results gratifying. In trained hands lumbar ganglionectomy is as safe as interval appendectomy and has fewer post-operative complications.

Time will not allow a full discussion of all indications for complete and temporary interruption of the sympathetic nervous system. No attempt will be made to discuss sympathectomy in Raynaud's syndrome, Buerger's disease, or intractable primary dysmenorrhea, for all of you are well acquainted with the brilliant palliation offered by proper sympathectomy in these diseases. My only plea is that you, as clinicians, will make examination of the peripheral vascular system, carefully noting the various pulsations and the color and temperature of the extremities, a routine part of your physical workup. Certainly, every patient who gives a history of difficulty with walking deserves a clinical evaluation of his peripheral vessels. All too frequently the patient has bought several pairs of new shoes, usually with various arch supports, and has taken numerous placebos by mouth and by needle before one of us has examined the patient's feet, finding them pulseless and cold. It must be realized that an evaluation of the peripheral vascular system can be made with a brief pertinent history and inspection and palpation of the extremities. Such complicated

instruments as the plethysmograph, oscillograph, etc., are by no means routinely necessary to determine the status of one's peripheral circulation.

The remainder of the discussion will be devoted to some of the various diseases in which the indications for sympathectomy are not so clear-cut or the value of sympathectomy has not become fully appreciated. This group will include peripheral vascular sclerosis, major and minor causalgia, the various sequelae of thrombophlebitis, hypertension and congenital megacolon.

PERIPHERAL VASCULAR SCLEROSIS (Arteriosclerotic Peripheral Vascular Disease.)

Arteriosclerosis is by far the most frequent cause of deficient arterial circulation to the lower extremities. We, as physicians, recognize the enormous toll taken by this degenerative disease and unfortunately maintain a fatalistic attitude toward the various therapeutic measures suggested. This is not surprising when one has given clinical trial to the major drugs used, including depropanex, papavarine, nicotinamide, tetra-ethyl-ammonium-chloride and priscol, for the results are almost uniformly poor.

Our fatalistic enthusiasm has been so intense that an effective method of treatment in carefully selected cases of peripheral vascular sclerosis has been largely overlooked. Recent large series of cases in which sympathectomy has been used for arteriosclerotic vascular disease show that the procedure is of unquestionable value **if proper case selection is carried out**. One will certainly not cure arteriosclerosis by sympathectomy. However, one can provide unquestionable palliation and moderate return of function in those cases of organic peripheral vascular disease in which there is an appreciable vasomotor component, and it has been shown repeatedly that vasospasm frequently accompanies arteriosclerosis.

One need refer only to the careful studies of deTakats^{1,2}, Trimble⁶, Telford⁵ and their co-workers to appreciate the results obtainable with lumbar sympathectomy. It has been found that a variable but often dramatic increase in walking ability can be effected. In other pa-

* Read before the Section on Surgery at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949.

tients, impending gangrene has been overcome and amputation averted. In others, sympathectomy has resulted in primary healing after amputations had been performed at lower levels for gangrene and ulceration. Intractable neuritic pain of the causalgic type can often be relieved, thereby converting a miserable existence into comfortable living.

Although Telford and Simmons⁵ reported favorable results in a series of 88 cases of arteriosclerosis treated by sympathectomy without preliminary testing, there is no question that careful selection of cases is essential to apply the procedure to those in whom reasonable benefit is to be expected. Case selection is done on the basis of response to a diagnostic lumbar sympathetic block with novocaine. If the extremity is warmed, if claudication is improved and shortening of the venous filling time is noted, then operation is advisable. Sympathectomy should be done in those cases presenting severe causalgic-like pain that is alleviated by novocaine block. Complete study of the patient's general condition is essential for severe cerebral, cardiac or renal involvement contraindicates operation.

The use of alcohol injections for prolonged paralysis of the sympathetic nervous system has been largely discontinued because of the ever-present danger of involving the somatic nerves with resultant palsy and neuritis. The following case emphasizes the occasional value of alcohol injection when sympathectomy is contraindicated:

CASE REPORT: J. H. M., 86-year old white male, admitted to Baptist Hospital in November, 1946, with impending gangrene of the fourth and fifth toes of the left foot with rather marked cellulitis of the dorsum of the foot. A right low thigh amputation for gangrene had been done one year previously. None of the peripheral vessels were palpable except for a faint pulsation in the femorals. With absolute rest in bed, systemic penicillin and daily sympathetic blocks with novocaine, the cellulitis subsided and the color of the two toes rapidly improved. Just prior to discharge, a lumbar sympathetic block with alcohol was done. Eleven months later the patient presented small patches of dry gangrene on the left fourth and fifth toes. The alcohol block was repeated and conservatism continued. In six weeks there had been slough of the small areas of

gangrenous skin followed by satisfactory healing.

Comment: Gangrene of the two toes was apparently prevented by lumbar sympathetic blocks with novocaine and alcohol.

Causalgia

Although Weir Mitchell, in 1864, published a classic description of causalgia—following injuries he noted in the Civil War—it was not until the recent war that proper attention was again focused on this rather bizarre condition. The diagnosis is usually reserved for the severe cases, such as follow approximately three to five per cent of peripheral nerve injuries. Here, the main feature is severe burning pain of a throbbing or aching character. The pain is intense, continuous and aggravated by the slightest emotional and physical stimuli. As a result, most of these patients go to absurd extremes to protect the extremity and develop symptoms to which the unfortunate label "psychoneurotic" is attached. These personality changes are unquestionably secondary and emphasize the need for correct treatment, for mental deterioration, suicide and drug addiction are not uncommon in untreated cases. The pain usually develops a few hours or a few days after the injury, but in milder cases it may be impossible to elicit a definite history of trauma. Often associated with the burning pain is a marked cutaneous hyperesthesia. The part may become so exquisitely hyperesthetic that even a gentle current of air produces torture to the patient.

Trophic and vasomotor responses in the involved extremity are obvious. The skin becomes shiny and glossy and the underlying subcutaneous tissue becomes atrophic. The bones may become osteoporotic from disuse and prolonged vasodilatation (Sudeck's atrophy). Joint stiffness, or periarticular fibrosis, which actually seems to be aggravated by physiotherapy, is often present.

The vasomotor manifestations may be sharply divergent, one case presenting vasodilatation⁸ and the next marked vasoconstriction¹³. Vasoconstrictor phenomena are more frequently seen. It has been postulated that early the picture is of vasodilatation, which progresses to a state of actual vasoconstriction. When vascular relaxation is present the skin is usually red, dry, scaly and warmer than that of the opposite extremity. The more usual picture is that of vasoconstriction in which the extremity is cold, the skin thin and glistening, and profuse sweating is noted.

The milder manifestations of this disease complex are unfortunately not appreciated. Patients with minor causalgia usually go from doctor to doctor without relief and finally decide that they must endure their state of chronic discomfort. Homans⁹ has repeatedly emphasized the syndrome of minor causalgia. Although no definite history of injury may be obtained, the patients often date the symptoms back to minor trauma such as a scratch, minimal puncture wound or bruise. These patients are especially likely to be tabbed as malingerers if there is a question of compensation. The pain is often vague and difficult to describe, but is characterized by its persistence.

Thus, the syndrome of causalgia includes a heterogeneous group of painful dystrophies. The chief difference is only one of degree. The underlying cause seems to be a sympathetic dysfunction, for dramatic relief is obtained by appropriate sympathetic block with novocaine. In the milder causalgic states this procedure has therapeutic as well as diagnostic importance, as shown by the following cases:

CASE NO. I: J. R., a 45-year-old Houston oil man, had ill-defined pain of aching character involving the entire left upper extremity, which had defied numerous therapeutic measures during its three year period of existence. He was using alcohol more and more in an attempt to get relief. No objective evidence of vasomotor abnormality was noted. Rather empirically, a left stellate block with novocaine was suggested and readily accepted by the patient. To my pleasant surprise, the pain was almost completely alleviated. Further blocks were anticipated but were not necessary as there was no return of the pain which had been present for the preceding three years. Approximately a year later the patient dropped by the office on a visit to Jackson and emphatically insisted that he had had no return of pain. This represents the most dramatic response that I have encountered from one sympathetic block.

CASE NO. II: W. S., 25-year-old college student, was seriously considering withdrawal from school because of constant burning pain in the right hand which interfered with writing. The pain was described as being more intense before examinations. The patient had sustained a penetrating chest wound from a machine

gun bullet during the last war. Physical examination revealed some cutaneous hyperesthesia of the hand. The palm was moist with perspiration. Dramatic response, persisting almost three months, was obtained following a stellate block with novocaine. The patient returned on two other occasions during the next ten months, when repeat blocks were done with equal effectiveness. On both of these occasions the pain had reappeared approximately a week before scheduled examinations, showing the aggravation of symptomatology by emotional stimuli.

In severer cases appropriate sympathectomy is necessary. The successful outcome of surgery can always be predicted by sympathetic block, which is an essential diagnostic procedure. The sympathectomy should be complete and should best include the site of injury. Thus, in penetrating wounds of the upper thigh associated with causalgia, resection of L-1, and even T-11 and 12, may be necessary, although the pain is predominantly localized to the foot itself.

Post Phlebitic Sequelae

As intravascular clotting continues to complicate trauma, obstetrics, surgery, cardiac disease, etc., we will continue to see the late results of thrombophlebitis. It would be difficult to estimate the invalidism resulting from this one disease. Probably the most important sequela is chronic lymphedema. This edema is apparently the summation of a variety of causes, including elevated venous pressure as a result of venous obstruction, chronic vasospasm resulting from low-grade inflammation, and fibrosis. Minimal trauma may introduce secondary infection with a resultant indolent ulcer. Recurrent erysipeloid infections are all too common. There is an abrupt onset of chills and fever associated with marked local swelling, pain and erythema. Recurrent episodes of thrombophlebitis are not unusual. The manifestations of causalgia with constant atypical pain, hyperesthesia and even osteoporosis are found in approximately thirty per cent of the cases with so-called chronic thrombophlebitis.

Treatment: Certainly, these patients are most difficult to treat and require intelligent cooperation on the part of the patient and the physician. Relief of edema by elevation of the foot of the bed, the use of external support in the form of elastic bandages and stockings, meticulous care of the skin to avoid fungus infection and occasional venous ligation are

important. Included in the group are those with relief of the causalgic type of pain and decrease in the chronic edema by lumbar sympathectomy. Careful case selection utilizing repeated diagnostic lumbar blocks is essential before advising surgery.

CASE REPORT: J. M., 30-year-old colored female, who developed postpartal thrombophlebitis five years ago, has since been bothered with chronic lymphedema, pain in the foot and ankle and heaviness of the extremity. A chronic ulcer developed above the internal malleolus and increased in size despite therapy. The right lower extremity was chronically swollen, having a circumference in the right calf 5 cms. greater than that in the left. A diagnostic lumbar sympathetic block apparently relieved the pain and discomfort and increased the patient's walking distance. It had no immediate effect upon the edema. Right lumbar sympathectomy was done with permanent relief of discomfort and appreciable diminution in the swelling. Two years later the patient developed left deep vein thrombophlebitis following a miscarriage. She was so gratified with the result of the first operative procedure that she returned for a left lumbar sympathectomy after appreciable improvement had been shown by a series of novocaine blocks.

Hypertension

Although it leaves much to be desired, there is continued interest in the surgical therapy of essential hypertension. Better results are now being obtained with the more radical procedures which remove the sympathetic chain from the third or fourth thoracic through the second lumbar ganglion and all three splanchnic nerves. The procedure is done bilaterally in stages ten days to three weeks apart. The operative mortality is quite low averaging about two per cent. The postoperative morbidity is often negligible, but in other cases there are distressing symptoms of postural hypotension, which are usually overcome by wearing a fitted girdle and elastic stockings. Radicular neuralgia may become a real temporary problem but ceases in two to six months.

Selection of patients: Unfortunately there is no preoperative test which can tell us with any accuracy what is to be expected in a given patient with hypertension from sympathectomy. Before considering a patient as a candidate for splanchnicectomy, a thorough,

painstaking workup is necessary. In the history, special emphasis is placed on the age, duration of the disease and the family and obstetrical histories. The cardiovascular examination includes careful auscultation, roentgen examination of the chest to determine heart size and an electrocardiogram. The ocular fundi are carefully studied with the pupils fully dilated by an ophthalmologist to determine the status of the smaller arterioles. The renal study includes intravenous pyelograms, P.S.P. excretion test, a Fishberg concentration test, and determination of the blood urea nitrogen, in addition to the routine urinalysis. Hourly blood pressure readings are taken for twenty-four hours and the response of the blood pressure to sedation is determined.

After such a complete study, patients can usually be grouped into one of four groups depending upon the severity of the hypertension and the damage that it has produced. This classification is essentially that of Wagener, Keith, and Barker and a useful one for comparison:

Group I: Patients whose blood pressure drops to normal with rest. Ophthalmoscopic examination reveals only an increased light reflex.

Group II: Patients whose blood pressure drops to normal or near normal with sedation with sodium amytal. Funduscopy examination reveals some spasm and compression at the arteriovenous crossing.

Group III: Patients whose blood pressure drops little with rest and sedation. Marked spasm, hemorrhages and exudates are frequently found upon ophthalmoscopic examination.

Group IV: Patients whose hypertension does not improve with bed rest or sedation. Funduscopy examination reveals papilledema in addition to hemorrhage, exudate and fragmentation of the vessels.

Obviously such a classification is a rather empirical one and many borderline cases will be found.

Indications for operation: Operation is rarely advised for patients in Group I. These patients are handled medically and followed carefully. If their basal resting diastolic pressure consistently averages above 100 millimeters, or, if signs of vascular or cardiorenal damage develop, then operation should be advised. All reports indicate that the greatest improvement is obtained in younger patients. Only rarely is splanchnicectomy advisable in patients over fifty years of age. Surgery is not advised

in those patients who have a long standing hypertension which they are tolerating well. If there is rather marked residual from a cerebral vascular accident, splachnicectomy is not indicated. Moderate to severe coronary insufficiency or coronary occlusion is a contraindication for operation. No patient is accepted with severe right-sided heart failure. If the various tests indicate poor renal function with the N.P.N. being above 40 milligrams per cent with poor concentration on the Fishberg test and with poor P.S.P. excretion, operation is not advised.

Operation is urged on patients in Group II with labial blood pressure. The Lahey Clinic group reports 73 per cent good results in this group. Operation is especially advised if there are signs of degenerative cardiovascular or renal disease which may still be reversible.

Benefits of sympathectomy:

(1) Lowering of blood pressure.

Fishberg reported that the diastolic pressure was 25 per cent or more below the pre-operative level in 25 per cent of the patients and that the systolic pressure had similarly fallen in 32 per cent. In 18 per cent the fall was to 150 millimeters systolic and 100 millimeters diastolic, or less. Hinton and Lord have shown that 54 per cent of patients subjected to an extensive sympathectomy, extending from T-3 through L-2 will have a diastolic pressure to below 100 millimeters of mercury at the time of the one-year followup. They find only a 26 per cent reduction below 100 millimeters with the classic Smithwick procedure, removing T-8 through L-2. Smithwick, in analyzing 439 personal unselected cases of hypertension followed one to five years or more, found 66 per cent to have an improved blood pressure and 62 per cent to have improvement in the cardiovascular status.

Palmer²² reports from the Massachusetts General Hospital on 49 patients subjected to bilateral thoracolumbar sympathectomy as compared to patients who were closely similar with regard to sex, grade of the disease and duration of known hypertension managed medically. The comparison is shown in the Fig. I. In a three to five year followup of 69 patients treated with dorsolumbar sympathectomy for essential hypertension, Palmer found 21 to be dead and therefore obvious failures, 31 with continued hypertension and therefore doubtful or equivocal results, and 16 (23 per cent) with normal or near normal pressures

and therefore successes. In general, it was true that the younger the patient (preferably under the age of 40) and the less the organic disease the more excellent would be the result. The chances for excellent results in women have increased but it is known that women tolerate hypertension better than men. In analyzing the study he found that there was a diminishing return of maintained normal or near normal blood pressure the longer one follows the patients. At first, two-thirds had normal blood pressures—later the figure was 50 per cent then 40 per cent, and finally reached 25 per cent in those cases followed three years or longer. Palmer points out that although this figure of 25 per cent is disappointing, that it is at least twice as good as results obtained by medical regiment plus the use of potassium thiocyanate in 100 cases followed by him at the same time. This author believes that sympathectomy should positively be prescribed as it is the only hope of palliation in Grade IV, or malignant hypertension. In his opinion, sympathectomy should be offered to those patients in Grade I and Grade II when internal observation shows that the actual levels of blood pressure are growing worse.

(2) Improvement in symptoms.

From 75 to 0 per cent of patients subjected to sympathectomy for hypertension report marked relief of headache, dizziness and nervous tension. This symptomatic improvement seems to be due to the redistribution of circulating blood with lowering of venous pressure and diminished diastolic cardiac filling.

(3) General.

At the Lahey Clinic 90 per cent showed reduction in the transverse diameter of the heart as determined by x-ray examination. In 64 per cent there was a return to normal size. 42 per cent of those patients having abnormal electrogram before surgery showed improvement postoperatively. Similarly, 58 per cent with impaired renal functional tests showed improvement after operation. Retinal vascular change improved in 66 per cent of 117 patients on whom followup examination was possible.

It has been well stated that splachnicectomy is not a cure for hypertension but that it offers the best means for palliation today. It should not be advised as a prophylactic operation in early benign hypertension but should be urged on patients under fifty years of age with symptomatic progressive hypertension

which is labile in type when the degree of cerebral, cardiac or renal damage is not such as to seriously interfere with life.

CONGENITAL MEGACOLON (Hirschsprung's Disease)

The term megacolon is used rather loosely to describe any enlargement of the colon found upon x-ray examination or at operation. True congenital, or idiopathic, megacolon is relatively uncommon, occurring approximately once in every nine or ten thousand hospital admissions. The disease affects males more predominantly than females by a ratio of three or five to one. Characteristically, the disease begins in early infancy and has even been reported in fetuses.

The diagnosis should not be difficult if one bears the condition in mind. Intractable constipation, associated with marked enlargement and distention of the abdomen, begins in the first few weeks or months of life and tends to progress thereafter. Visible peristaltic waves are often seen. It is not unusual for the child to go two or three weeks without a bowel movement. The clinical diagnosis can be substantiated by a flat plate of the abdomen which will show tremendously distended loops of colon with large fecal masses. Barium enema will reveal marked dilatation and frequently elongation of the colon. Involvement of the left colon is more frequent, but cases in which the entire large bowel shows tremendous dilatation are not uncommon. Rectal and proctoscopic examinations should be done to exclude organic obstruction which is not present in true idiopathic megacolon.

From experimental work, it seems that an imbalance of the autonomic nervous system is responsible for this bowel condition. In some cases, the sympathetic-parasympathetic dysfunction seems to be sympathetic hyperactivity; in others, there seems to be a true parasympathetic deficiency.

Treatment:

Medical treatment consists in frequent rectal dilatations and the use of proper diet, laxatives and rectal irrigations. Surprisingly, a number of diametrically opposed drugs have been efficacious in some cases. Atropine may be helpful, but is usually poorly tolerated because of its side effects. Syntropan has an atropine-like effect in inhibiting the parasympathetic nerve endings and is tolerated quite well. Prostigmine and benzedrine have been reported to be of value.

Should medical therapy fail to achieve normal evacuations, and if the response to the drugs decreases, then surgical therapy should be seriously considered. In the earlier cases, sympathectomy (lumbar ganglionectomy with presacral resection in females; lumbar sympathectomy only in males) is of real value. The use of a spinal anesthetic, as advocated by Martin and Scott, is most important in selection of proper cases for sympathectomy. Benefit is to be expected in only those cases that present marked colonic contraction with evacuation of feces after the sympathetic outflow has been abolished by the spinal anesthesia. In later cases, and especially those with great elongation of the colon (dolichocolon), sympathectomy is of little value. Many of these cases will require colon resection for relief of symptoms.

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Discussion

Dr. Mayo Flynt (Meridian)—I think it should be mentioned in passing that if one plans an operative procedure around the shoulder and axilla under brachial plexus block, it should be remembered that anesthesia is not distributed evenly from the shoulder to the fingers, but leaves a zone of hypesthesia over the shoulder and on the inner aspect of the arm, occasionally as far as midway between the axilla and the elbow. The latter is under the control of the two intercosto-humoral nerves joining the lesser internal cutaneous nerve. The shoulder is innervated by the sensory nerve supply from the superficial branches of the cervical plexus; therefore, it is necessary to infiltrate the axilla fanwise along its thoracic wall and make subcutaneous injections along the clavicle and acromion.

In regard to toxicity of anesthetic solutions, I might say that we haven't been as fortunate as Dr. Adkinson because we have had several patients to manifest toxic signs and a few rather frightening experiences. One should always be prepared to deal with this type of emergency. As you know, toxic reactions can be of two types:

(1) Circulatory, characterized by a drop in blood pressure, pallor, sweating, weak pulse, nausea, and vomiting.

(2) Neurologic, manifested by talkativeness, excitement, and convulsions.

Circulatory reactions should be treated by administering oxygen and ephedrine. For neurologic reactions, oxygen should be administered by intermittent inflation if necessary and pentothal sodium intravenously.

Severe reactions might be prevented by the use of intradermal test of the solution, by injecting the anesthetic solution slowly, aspirate frequently to avoid intravascular injection, abandon the injection at signs of idiosyncrasy, give preliminary medication of morphine and barbiturates, and combine ephedrine with the anesthetic solution; however, we eliminate ephedrine in blocking fingers and toes, and in patients with hyperthyroidism, hypertension, and coronary disease.

It also should be remembered that toxicity increases in geometric progression with the concentration of the solution and that cachectic or debilitated patients do not tolerate local anesthetic solutions as well as one in good condition; therefore, the doses should be reduced by 30 to 40 per cent. Injecting cold solutions delays the onset of anesthesia.

In major surgery of the lower extremities, if regional block is the anesthesia of choice, we prefer continuous spinal or saddle block rather than nerve trunk block because of the simplicity of the procedure, the time saving element, the uniformity of good results, and the safety of the anesthetic. In approximately 150 general procedures done under continuous spinal anesthesia and saddle block in the past year, we have had no operative or anesthetic mortality and only slight morbidity.

Dr. Geo. H. Martin (Vicksburg)—I would like to be one of the first to congratulate Dr. Johnston on this very excellent and concise presentation. Surgery of the sympathetic nervous system is a relatively new field and one which is of great interest, not only to the surgeon, but to the entire medical profession.

In the few minutes which I have allotted to me I would like to discuss briefly two phases of sympathetic surgery which Dr. Johnston was unable to discuss because of lack of time, namely; Raynaud's disease, and sympathetic block in the treatment of herpes zoster.

Raynaud's Disease

Raynaud's disease is classified as a vasospastic functional peripheral vascular disease. In the early stages it is considered to be purely a functional vasospasm without primary organic disease of the artery. The consensus of opinion is that Raynaud's disease is primarily a vasospasm due to hypersensitivity of the peripheral arterioles to sympathetic stimulation. The condition occurs most frequently in young women between the ages of 15 and 30 with the ratio of men to women being about 3 to 7. It involves more often the upper extremity. These patients complain of extreme sensitivity to chilling and state that their hands are severely affected by cold weather. There is increased sweating and pain in the tips of the fingers. The disease is characterized by a triphasic color change. The fingers get white as vasospasm occurs then become cyanotic and blue which in turn gives way to the red, flushed appearance of hyperemia as the vasospasm is relieved. If this condition is allowed to progress gangrene develops, usually of the distal end of the fingers.

The following two patients illustrate Raynaud's disease treated by sympathectomy.

Case No. 1, A.M., 16-year-old, white female, first seen in the Street Clinic on January 15, 1945, with a complaint of coldness, tingling

and numbness of the fingers and feet with bluish discoloration. Her complaint began June, 1944, when she noticed her fingers getting sore at the tips. She developed ulcers on the tip of the first finger of the right hand and later developed ulcers on the tips of the fingers of the left hand. Two months later the patient noticed her fingers getting cold and blue, and when cold weather began the tips of her fingers would even become purple in color. The patient had to wear gloves at all times during the winter and could not expose her hands from beneath the covers at night.

At the time of admission the patient complained of ulcers on the right hand and stated that her fingers burned, tingled, turned white, then blue, then red. She did not use tobacco.

Preoperative investigation was carried out by doing a right stellate ganglion block with novocain. The patient's hands became warm and pink and all sweating stopped. She was admitted to Mercy Hospital on January 19, 1945, where a right preganglionic sympathectomy was done using the anterior approach of Telford. Eight days following the first operation the same procedure was carried out on the left side. The patient had an immediate and dramatic response to sympathectomy. The hands became warm and pink and the ulcers healed rapidly. She has been followed in the Clinic since that time and although she later developed a typical picture of scleroderma, she has continued to do well. She continues to wear gloves in the wintertime and on extremely cold days she is given priscol by mouth. There has been no progression of the gangrene and her fingers have remained free of any extensive ulceration.

Case No. 2, R. T., colored male, 34 years of age. This patient was first seen in the Street Clinic on February 23, 1946. Eight years before admission the patient noticed that his hands became cold and painful in the wintertime, and often the discomfort was so great that he would have to stop work. In November, 1945, the patient accidentally cut the ring finger of the left hand. The wound became infected and two days later the entire finger became gangrenous. The finger was amputated by his local physician at the proximal joint. Three weeks before admission the patient noticed the fingers of the left hand getting blue and cold, especially the index and middle fingers. This condition became steadily worse until the fingers turned black from the tips of the fingers to the distal joint. Infection occurred in the index of the left hand which

necessitated incision and drainage. The patient does not smoke.

Examination of the extremities revealed an old amputation of the ring finger of the left hand. The little finger was cold and blue from the proximal joint outward and there was slight flexure contracture of this finger. There was dry gangrene of the tips of the index and middle fingers extending to the distal joint. The right hand was cold from just above the wrist downward. The radial pulsation was good. There were scarred areas on the pads of all fingers.

The patient was admitted to Mercy Hospital on February 23, 1946, where a classical Smithwick cervicodorsal preganglionic sympathectomy was done. Eight days later the same procedure was carried out on the opposite side following which the hands became warm and dry. Sweating ceased from the nipple line upward. The gangrene of the fingers became dry in type and was simply debrided. No formal amputation was necessary.

During the following winter the patient stated he was much less sensitive to cold. He continued to wear gloves on our advice but had no further ulceration or gangrene. He has remained markedly improved.

Herpes Zoster

Herpes zoster, although not a dangerous disease, has long been a problem in regard to satisfactory treatment. The numerous and various medications which have been advocated attest to the fact that the optimum treatment is still being sought.

Present day evidence supports the opinion that herpes zoster is essentially posterior poliomyelitis due to the virus of chickenpox. Children exposed to adult patients with herpes zoster may develop chickenpox and adults may develop herpes when exposed to children with varicella.

In the past five years we have treated approximately 30 cases of herpes zoster by paravertebral sympathetic block. It is not clearly understood why procaine block relieves the pain and causes drying of the vesicles. It is thought to be due to the interruption of a vicious cycle of nerve impulses. Relief of pain and healing of the vesicles accompanies release of vasospasm. Of the patients we have treated, 74 per cent were immediately and completely relieved of pain by one sympathetic block. Twenty-one per cent of the patients required a second block usually two days after the initial injection because of return of pain. In

nearly all patients the vesicular eruption began drying promptly and in two to four days remained only as dry crusts. Our percentage of failures to obtain relief from pain by sympathetic block has been approximately 5 per cent.

Case No. 1, M. M., 56-year-old white female, first seen in the Clinic on February 19, 1948, with a history that five days previously she began having burning, tingling, and neuritic type of pain involving the side of the neck, the posterior shoulder, and anterior chest wall on the left. Three days later she began to have eruption of vesicles and the pain became so intense the patient was unable to sleep at night and could get relief only by taking large doses of codeine.

On admission to the Clinic the patient showed marked vesicular eruptions of herpes zoster involving the left side of the neck, the left anterior chest wall, and left shoulder. She complained bitterly of pain and discomfort. A left stellate ganglion block was done using 1 per cent novocain with the production of a good

Horner's syndrome. The patient experienced immediate relief from the pain and there was rapid drying of vesicles. Five days later the vesicles had completely disappeared except for dry crusts. She has had no recurrence.

Case No. 2, T. E. H., 42-year-old, white male. This patient began noticing burning, tingling pain along the left costal margin five days before admission. Two days before entrance numerous watery blebs had appeared over the site of the pain. He was unable to rest and sought relief from the persistent pain.

Examination revealed the typical blebs of herpes zoster involving the region of the left eighth and ninth thoracic nerve. A paravertebral block was done infiltrating the sixth, seventh, eighth and ninth thoracic ganglia on the left side with 1 per cent procaine. The patient experienced immediate relief of pain and was allowed to go home and return as an outpatient. Two days later the vesicles were drying rapidly and at the end of five days the patient was completely free of pain and had no further difficulty.

THE SOUTHEASTERN SURGICAL CONGRESS POSTGRADUATE ASSEMBLY

March 6, 7, 8, 9, 1950 — Shoreham Hotel, Washington, D. C.

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| DR. OTTO C. BRANTIGAN.
<i>Extrapleural Plombage Using
Lucite Balls in the Treatment
of Pulmonary Tuberculosis</i> | DR. HAL E. HOUSTON.
<i>The Meckel's Diverticulum</i> | DR. WILLARD H. PARSONS.
<i>Surgical Problems in the Aged
Negro</i> |
| DR. ENOCH CALLAWAY.
<i>Carcinoma of the Cervix</i> | DR. HARRY H. KERR.
<i>Haemangio-Sarcoma of the
Stomach</i> | DR. J. C. PATTERSON.
<i>Gastrocolic Fistulae</i> |
| DR. WILLIAM C. CANTEY.
<i>Colostomy and Ileostomy</i> | DR. LUCIEN A. DeDOUX.
<i>C. Jeff Miller: His Teachings in
the Management of Uterine
Fibroids</i> | DR. WILLIAM F. RIENHOFF.
<i>Hyperparathyroidism Diagnosis
in Bone Surgery</i> |
| DR. BAYARD CARTER.
<i>The Treatment of Squamous
Celled Carcinoma of the Vulva</i> | DR. HOWARD MAHORNER.
<i>Exploration of the Common Bile
Duct</i> | DR. CHARLES ROUNTREE.
<i>The Use of Bone Bank Bone in
Bone Surgery</i> |
| DR. RICHARD CATTELL.
<i>Management of Hyperthyroid-
ism</i> | DR. J. D. MARTIN, JR..
<i>The Complications of Spleen-
ectomies</i> | DR. JOSEPH S. STEWART.
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omies, Morbidity and Mortality
in a General Hospital, not As-
sociated with a Teaching Center</i> |
| DR. HARRY LEE CLAUD.
<i>Plastic Surgery of Interest to
the General Surgeon</i> | DR. HENRY W. MAYO, JR..
<i>Present Status of the Surgical
Therapy of Gastric and Duo-
denal Ulcer</i> | DR. GABRIEL TUCKER.
<i>Diagnosis and Treatment of
Carcinoma of the Larynx</i> |
| DR. CONRAD G. COLLINS.
<i>Benign Lesions of the Cervix</i> | DR. RAYMOND W. McNEALY.
<i>The Management of Carotid
Body Tumors</i> | DR. WILLIAM L. VALK.
<i>Segmental Renal Functions
Studies in Surgical Patients</i> |
| DR. DONALD S. DANIEL.
<i>Endometriosis</i> | DR. WILLIAM F. MEACHAM.
<i>Surgical Treatment of Intra-
Cranial Aneurysms</i> | DR. H. H. WARE, JR.
<i>Ectopic Pregnancy</i> |
| DR. EDGAR W. DAVIS.
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pulmonary Neoplasms</i> | DR. A. T. MILLER, JR..
<i>To be announced</i> | DR. ROBERT J. WILKINSON.
<i>The Effect of Medical Education
Upon Our Economic Future</i> |
| DR. GILBERT F. DOUGLAS.
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| DR. FREDERICK H. FALLS.
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Pregnancy</i> | DR. LOUIS M. ORR.
<i>Carcinoma of the Urinary Blad-
der</i> | DR. WILLIAM WHITE
<i>Radical Operation of Cancer of
the Breast</i> |
| DR. ALBERT E. GOLDSTEIN.
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the Treatment of Surface Can-
cer</i> | DR. HAYS R. YANDELL.
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<i>The Spleen, A Few Surgical
Aspects</i> | DR. GEORGE T. PACK.
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<i>Treatment of Mixed Peritonitis
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| DR. ARCHIBALD C. HEWES.
<i>Chest Conditions which Come
Under Realm of General Surg-
ery</i> | | |

Regional Block Anesthesia in Surgery of the Extremities*

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Brookhaven, Mississippi

INTEREST IN regional block anesthesia was revived during the last war. A good number of surgeons operating at or near the front lines were concerned with selecting an anesthetic agent which would be both effective and safe under the existing conditions. It was quite evident that the inhalation gases were not practical for routine use not only because of their explosive possibilities under battle conditions but also because of the shortage of trained anesthetists for their administration. In the 103rd Evacuation Hospital closed inhalation nitrous oxide, oxygen, and ether were used routinely for chest and abdominal surgery. In the early months of the war we relied on intravenous sodium pentothal anesthesia for most of the extremity surgery. Intravenous sodium pentothal served a very useful purpose, and many thousands of extremity cases were done under it without serious mishaps. Some of us, however, observed that intravenous sodium pentothal definitely increased the shock of already shocked patients. We also confirmed the observation of others that intravenous sodium pentothal does not lend itself too well to extensive surgery of the skin. These patients required rather large amounts of the drug to maintain the anesthesia. At the insistence and under the capable direction of Dr. John Abajian, the surgical section of our hospital adopted the policy of attempting all extremity surgery under regional block anesthesia. The results were quite gratifying, and we found that approximately 75 per cent of our extremity cases could be done under block anesthesia.

Dr. John Bieri of Philadelphia, who was chief anesthetist in our hospital, became quite proficient in the technique of the various regional blocks, and it was my good fortune to become familiar with the techniques and to do a rather large number of these cases.

Since resuming private practice, my interest in regional block anesthesia has continued, and I have found that it lends itself quite well to surgery of the extremities, particularly traumatic surgery in civilian practice. By blocking the nerve trunks with one of the local anesthetic drugs, at a distance from the operative site, one is able to do whatever surgery is necessary, distal to the block, without discomfort to the patient and with definite advantages to the surgeon.

These advantages include the elimination of additional insult to the cardiovascular system in patients who are already in varying degrees of shock, in aged and debilitated patients, and in patients with kidney or heart damage; by using block anesthesia; one does not have the worry of the generalized muscular relaxation, decreased venous return to the heart, and possible toxic effect on the various parenchymatous structures; postoperative nausea and vomiting are eliminated. In selected cases of simple fractures involving the extremities and of traumatic surgery of the extremities, regional block anesthesia has proved rather satisfactory in that we have been able to take care of a good number of these cases in the emergency room or in the clinic, thereby eliminating hospitalization of the patient who would otherwise have to be admitted to the hospital for at least a few hours to react from a general anesthesia. Application of plaster of Paris casts following reduction of extremity fractures is made easier due to the fact that the patient is awake and can cooperate. This is especially true in the application of shoulder spicas and Velpeau casts. Working as I do in a small but busy hospital where only one trained anesthetist is available, and that anesthetist often busy with other surgery, it has proved rather satisfactory to be able to block an extremity and proceed with whatever surgery is indicated rather than lose valuable time waiting for the completion of a previously scheduled operation and the service of the anesthetist.

The advantages of regional block anesthesia over local infiltration are obvious. The anesthetic agent is injected at a site well away from the involved or injured portion of the

* Read before the Section on Surgery at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Mississippi, May 10-12, 1949.

extremity. Thus, in infected areas, the disadvantage of injecting the anesthetic agent into or near infected tissues is avoided. Simple fractures are not converted into compound ones as is so frequently the case when injecting novocaine into fracture sites. The process of wound healing is not interfered with, and the appearance of the tissues at the site of operation is not altered.

There are obvious disadvantages to this type of anesthesia. There is the possibility of a procaine reaction. I am sure this has occurred, and I cannot overestimate the gravity of the situation should this type of reaction develop. In several hundred cases, however, I have not encountered any type of reaction or any untoward after effects. I feel that in using block anesthesia one must be alert at all times for the following symptoms of procaine sensitivity: extreme pallor of the face; cyanosis of the lips, fingers, and ears; nausea, vomiting, cold sweats; or of the complaint of a haze before the patient's eyes. Should any of these symptoms develop, administering of the anesthetic should be discontinued immediately and appropriate measures instituted for overcoming the reaction. There is the possibility of exploding a nerve trunk by injecting the solution directly into the nerve, of entering the pleurae in brachial plexus blocks, or of intravenous injection of the anesthetic agent. These accidents are due to technical errors, however, and can be avoided by adhering to careful techniques in the administration of the drug. This type of anesthetic requires a little more time on the part of the surgeon. About fifteen to twenty minutes and sometimes thirty minutes are required between the time the nerves are blocked and complete anesthesia is established.

Anesthetic Agent

Of the various drugs which have been used for block anesthesia, procaine (novocaine) has withstood the test of time and is the most widely used drug at the present time for this type of anesthesia. We have used procaine exclusively in 1 per cent and 2 per cent solutions. The 2 per cent is used for the larger nerve trunks as the brachial plexus or sciatic trunks, and the 1 per cent solution for the wrist, ankle, and digital blocks. It is our practice to add epinephrine to the procaine solu-

tion (1 drop of 1/1000 epinephrine¹ to each 10 cc. of procaine solution).

Equipment

We have all the equipment that we use assembled in a small tray which can be wrapped and sterilized for use at any time. Each tray contains one 20 cc. syringe, one 2 cc. syringe, two 4-ounce medicine glasses, two eye droppers, and four 22-gauge short beveled needles of the following lengths: 2 cm., 5 cm., 8 cm., and 10 cm. Needle No. 1 is used for raising an intradermal wheal into which other needles can be passed painlessly. Needle No. 2 is used for instituting wrist and ankle blocks and for blocks of the fingers and toes; needle No. 3, for brachial plexus and femoral blocks; needle No. 4, for sciatic blocks.

It is quite evident that an extremity can be blocked at any level at which the nerves are accessible to injection. In our hands, however, we find that a brachial plexus block is more satisfactory for any surgery from the shoulder to the wrist. We use a wrist block (ulnar, radial, and medial) for the surgery of the hand and digital blocks for surgery of the fingers. In the lower extremities a hip block which consists of blocking the great sciatic nerve, the femoral nerve, and the lateral femoral cutaneous nerve, is most satisfactory for surgery from the hip to the ankle. We use ankle block (anterior and posterior tibial) for the foot and digital block for the toes.

Brachial Plexus Block

The brachial plexus arising as it does primarily from the anterior division of the lower four cervical nerves and the first dorsal nerve, emerges between the scalenus anticus and the scalenus muscles at the upper border of the first rib. The plexus crosses the first rib and passes beneath the clavicle at about its mid-portion. In this area the brachial plexus runs side by side with the subclavian artery. The brachial plexus may be blocked by several approaches. The supraclavicular route is by far the safest and most accurate. It is our practice to do our brachial plexus blocks by this approach with the patient lying on his back with the arms alongside the body. The shoulder on the side to be injected is brought downward so as to lower the clavicle, and the

1. The epinephrine added to the solution causes a local vasoconstriction, thus retarding the return of absorption which not only decreases the toxicity of the procaine but also maintains the intensity and duration of the block.

patient's face is turned to the opposite side. The operator stands at the patient's head. He can then visualize the chief landmarks for the brachial plexus block. The midpoint of the clavicle generally corresponds with the prolongation of the external jugular vein which is apparent in the great majority of cases. The subclavian artery is palpated, and its lateral edge will usually correspond to the lateral margin of the external jugular vein. A wheal is raised just lateral to the external jugular vein about 2 cm. above the superior margin of the clavicle. The patient is now asked to signal immediately upon feeling a shooting pain or shock down the arm and into the hand. A 5-cm. needle, unattached to syringe, is inserted through the wheal and advanced downward, backward, and inward toward the first rib. At a distance of 2 to 3 cm. the needle usually comes in contact with the first rib. If paresthesia has not been obtained by the time the needle point touches the first rib, the needle should be partially withdrawn (above the deep fascia) and its direction slightly changed. By a successive series of withdrawals and reinsertions the needle is walked, if you please, along the first rib from its superior to its inferior border, or slightly from side to side, until the desired paresthesia, caused by touching the plexus root is obtained. As soon as the patient signifies that a sharp pain is felt down the arm and in the hand, injection is made. Ten cc. of the 2 per cent procaine and epinephrine solution are deposited in the area. Before depositing the solution, the plunger of the syringe is withdrawn slightly to insure that an intravenous injection is not being made. It is our practice while making the injection to slightly withdraw and reinsert the needle, keeping the point moving in order to lessen the chances of exploding a nerve trunk. Having deposited the solution in this area, the needle is withdrawn above the deep fascia and reinserted in the direction of the transverse process of the sixth cervical vertebra. It is from just below this process that the seventh nerve, which forms the axis of the brachial plexus, emerges. When the point of the needle comes in contact with the transverse process of the sixth cervical vertebra, 5 cc. of 2 per cent epinephrine-procaine solution are deposited. Anesthesia is usually instantaneous following the paresthesia. In some cases, however, ten to fifteen minutes should be allowed before the operation is begun. Paresis is more frequent than paralysis, and the patient in most cases

is able to move the forearm and fingers during the operation. This has proved very satisfactory in repairing severed tendons and in plastic procedures on the hand (deep palmar contractions, et cetera).

Wrist Block

The median, musculospiral, and ulnar nerves can be blocked at the elbow. It is our practice, however, to do a brachial plexus block for surgery on the upper extremity as far down as the wrist. For surgery of the wrist or hand we prefer to block at the wrist.

The **median nerve** is approached at the level of the styloid process of the ulna. This is roughly two fingers' breadth proximal to the distal wrist crease. With the wrist held in supination, the tendon of the palmaris longus and flexor carpi radialis are made prominent by asking the patient to clench the fist or to flex the wrist against opposition. A wheal is raised between the two tendons in the area previously described, and a 5-cm. needle is inserted through the wheal and advanced in a direction to the surface of the skin until its point has just passed the deep fascia². Here paresthesia is usually signaled by the patient and 5 cc. of 2 per cent solution are injected.

The **musculospiral nerve** may be rolled beneath the palpating fingers, and moderate paresthesia obtained by firm palpation on the radial side of the forearm approximately midway between the elbow and wrist. When one is able to elicit pain from the patient by firm palpation and rolling the nerve over the radius at this area, one may proceed with the block by raising a skin wheal over this region. A 5-cm. needle is inserted at right angles to the skin surface until the point of the needle touches the lateral border of the radius; 5 cc. of the solution are then injected beneath the deep fascia and against the surface of the bone. We have found that by injecting this over an area about 1 inch in a transverse direction, we are always able to anesthetize the musculospiral in this region.

Ulnar nerve. With the hand of the patient held in supination, the tendon of the flexor carpi ulnaris is defined by palpating at the level of the styloid process of the ulna, and a wheal is raised on the radial side of this tendon. A 5-cm. needle is inserted through the wheal and advanced tangentially to the

2. It is often necessary to point the needle slightly towards the flexor carpi radialis as the median nerve often lies beneath this tendon.

tendon in a direction perpendicular to the surface of the skin. When paresthesia is obtained, and this usually occurs soon after the point of the needle has passed the deep fascia, 5 cc. of the 2 per cent solution are deposited. We have found that blocking the wrist in this manner is usually sufficient for any type of operation on the hand or fingers.

Digital Block

The finger block should be made through the dorsal surface rather than through the palm. The digits may be anesthetized by raising wheals at the interdigital folds on the dorsum of the hand, both lateral and medial to the digit involved. One per cent procaine-epinephrine solution is injected against both the dorso-lateral and the dorsomedial aspect of the bone after which the needle is inserted deeper in the web until the needle point can be felt through the palmar surface and the 1 per cent solution is deposited in a fan-like manner beneath the metacarpal heads. For a more proximal block, the needle may be inserted at the mid-portion of the metacarpals and the solution deposited around the bone. The needle should advance to, but not through, the palmar skin.

Hip Block

For blocking the thigh or leg for surgery of the lower extremity, it is necessary to block the three major nerves, namely, the sciatic, the femoral, and the lateral femoral cutaneous.

The great **sciatic** nerve leaves the pelvis through the great sacrosclatic foramen below the periformis muscle, turns downward between the great trochanter of the femur and the tuberosity of the ischium, and enters the thigh beneath the lower margin of the gluteus maximus muscle. With the patient lying on the side opposite the one to be injected, with the knee of the involved side brought towards the face just enough to allow the thigh to be flexed at an angle of 135 degrees on the trunk, the upper extremity of the great trochanter of the femur and the posterior superior spine of the ilium are palpated and marked. A line is drawn between these two points (iliotrochanteric line). This line is bisected. Perpendicular to, and $2\frac{1}{2}$ cm. below the center of this line is the site for the injection of the sciatic nerve. A 10-cm. needle is inserted through the wheal raised at this site and is advanced in a direction perpendicular to the surface of the

skin until its point reaches the bone. Usually just before the bone is encountered paresthesia is induced. If the landmarks have been taken with extreme accuracy, the first attempt usually will be successful. If, however, no paresthesia is obtained, the needle may be partially withdrawn and reinserted a little more obliquely upward or downward until the nerve is located. Injection is then made of 10 cc. of 2 per cent solution. The great sciatic block is indicated in reduction of Pott's fractures and for operation on the posterior region of the thigh. It may be used for operation on the lateral aspect of the leg and foot. Its greatest usefulness, in my hands, is in conjunction with femoral and lateral femoral cutaneous blocks for complete anesthesia of the lower extremities.

The **femoral** nerve emerges from the pelvis beneath Poupart's ligament. At Poupart's ligament it lies lateral to the femoral artery and is most easily blocked in this area. With the patient lying in the supine position, the femoral artery is defined by palpating immediately below Poupart's ligament, and a wheal is raised immediately lateral to the artery. A 5-cm. needle is inserted into the wheal and is advanced in a direction perpendicular to the surface of the skin until the resistance of the fascia lata is overcome. The needle is then gently and gradually advanced about 1 cm. deeper, and as soon as paresthesia is obtained, 5 cc. of the 2 per cent solution are deposited.

The **lateral femoral cutaneous** nerve may be blocked by injecting 5 cc. of 2 per cent solution in a fan-like manner directly at the level of the anterior superior spine of the ilium. The solution is injected below the fascia of the external oblique muscle and slightly beneath the iliac crest.

Ankle Block

The ankle block is accomplished by blocking the anterior and posterior tibial nerves. The anterior tibial nerve becomes superficial on the anterior aspect of the ankle where it lies on the anterior surface of the tibia lateral or medial to the tendon extensor proprius hallucis.

The **anterior tibial** is approached by having the patient lie on his back with the lower extremity, on the side to be injected, flexed so that the sole of the foot may rest on the table and as near its edge as possible. A line is drawn around the ankle at the base of the internal malleolus, and a wheal is raised on this line on the lateral margin of the tendo:

of the tibialis anticus muscle. A 5-cm. needle is introduced through the skin wheal and advanced in a sagittal direction until its point impinges on the tibia. The needle is drawn backward about 2 mm., and injection is made between the deep fascia and the bone.

The posterior tibial nerve becomes superficial behind the ankle where it lies beneath the deep fascia to the outer side of the tibial vessels. The needle is passed through a wheal raised through the inner side of Achilles tendon at the level of the base of the internal malleolus and advanced horizontally towards the posterior aspect of the tibia in a direction slightly inclined outward. After piercing the deep fascia, paresthesia is usually induced. If not produced, a few punctures made in the sagittal plane of the ankle will usually locate the nerve. 5 cc. of 2 per cent solution are deposited at the site. It is usually necessary in ankle and wrist blocks to infiltrate a collar of .5 of 1 per cent solution around the wrist or ankle in order to block off the superficial innervations.

Digital Block

Anesthesia of the toes is produced in the same manner as the fingers. As in injecting the hand, the needle should always be introduced into the dorsum of the foot but never through the sole. The toes can usually be blocked by introducing novocaine through the intradigital folds and injecting in a fan-like direction against the metatarsal heads.

Summary

In summary, I do not suggest the routine use of regional block anesthesia in all extremity surgery. I do feel, however, that in selected cases this type anesthesia offers definite advantages to both the patient and to the surgeon.

Regional block anesthesia is not dangerous to life. The main effects of regional anesthesia are limited to relatively small regions of the body, leaving intact the central nervous sys-

tem. Surgical convalescence is shorter than after the administration of a general anesthesia. The incidence of pneumonia and pulmonary edema, which are occasionally encountered with general anesthesia, is reduced. There is no postoperative nausea and vomiting following regional block anesthesia. A successful block affords perfect anesthesia as well as muscular relaxation of the extremity. Under this type anesthesia, the possibilities of traumatic or elective surgery on an extremity are limited only by the duration of the procedure.

In our hands, the main usefulness of regional blocks has not been as anesthetic for amputations, open reduction of fractures, bone grafts, skin grafting, or other major elective surgery of the extremities, all of which we have been able to do successfully under block anesthesia. The main usefulness, however, has been as a clinic or emergency room procedure in reducing fractures and dislocations, in repairing severed tendons and in doing debridements, thereby often shortening or even eliminating a hospital stay for the patient.

Nothing original has been offered in the way of techniques. The techniques are fairly well standardized, and the ones described are, for the most part, those of Labat. The techniques are quite simple, and my only reason for presenting them in detail is the fact that this type anesthesia receives so little attention in the current literature and is taught in so few medical schools or teaching institutions.

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I am indebted to Miss Adell Lipsey, the talented daughter of Dr. and Mrs. J. H. Lipsey, for the sketches from which the lantern slides were prepared.

ANNOUNCEMENTS

John W. Long, M.D. announces the opening of his office for the practice of general surgery at 746 Manship Street, Jackson, Mississippi.

The Diagnostic Criteria for Brucellosis*

HARRY J. SCHMIDT, M.D.

Biloxi, Miss.

SIR WILLIAM OSLER stated "The syphilis we see but do not recognize everywhere awaits diagnosis, so protean are its manifestations."† The same statement could easily be made for brucellosis, a disease that closely resembles syphilis but which, unlike syphilis, has yet no specific test for diagnosis.

The present situation of brucellosis is somewhat similar to that of syphilis as it existed years ago when Osler suggested that the disease was of common occurrence. The majority of physicians refused to believe that lues was present among their patients and the true condition was not proved until the use of the Wassermann test became widespread.

Although excellent work has been done in brucellosis and in recent years the disease has generally been acknowledged to be of more common occurrence, yet the true incidence of the infection is not recognized. With its protean clinical manifestations and the inadequacy of laboratory procedures, chronic brucellosis is a most difficult disease to identify. With this situation in mind we shall discuss briefly the merits of the various tests employed and attempt to arrive at some criteria for diagnosis.

The agglutination test is the procedure most commonly used for the detection of the disease. Agglutinations are frequently found in the acute cases and at times following an acute phase of a chronic infection. The test is of little value in the diagnosis of chronic brucellosis.

The agglutination test is not truly a diagnostic procedure. It is merely a method of demonstrating antibodies when present. In a low-grade infection of brucellosis one would hardly expect to find these antibodies. However, they may appear intermittently or at irregular and unpredictable intervals. A negative agglutination never excludes the possibility of infection. In endemic areas agglutinins in any titer, however low, are of significance in the presence of suggestive symptoms.

In the author's series one hundred cases having various types of fever and symptoms suggestive of brucellosis were checked for the presence of agglutinins. All of the patients were definitely known to have been drinking raw milk from Bang's diseased cattle. In only eighteen instances were antibodies found to be present in the blood. Three of the cases were in the acute phase showing titers above 1-160. The remaining fifteen cases were of the chronic type; two having titers of 1-80; two in 1-40; nine in 1-20; one in 1-10 and one case was reported as a moderate agglutination. All of the patients showing the presence of agglutinins were observed for a period of one year or longer and could be definitely considered as having active brucellosis. Subsequent examinations of many of the eighty-two cases did not show the development of antibodies even in the presence of continued symptoms.

Robinson and Evans¹ reported five cases of chronic brucellosis proved by positive cultures, in which the agglutinations were as follows: two in 1-40; one in 1-20 and two did not show the presence of antibodies. Utilizing all available laboratory methods, these two investigators concluded that the specific tests to detect the chronic infection are unreliable.

Foshay² states that about 10 per cent of culturally proved acute cases fail to develop serum agglutinins at any time during observation periods of many months.

The reason for the inadequacy of the agglutination test may be attributed to the marked attenuation of the *Brucella* organisms. This is partially brought about by their widespread distribution in cattle. It is not unlikely that the virulence and the antigenic properties of the organism have been reduced to such an extent as to be unable to stimulate the formation of antibodies in the host.

There are other factors too that detract from the value of the agglutination test, namely the lack of a standard antigen. We are familiar with the fact that a specimen of blood may be sent to different laboratories and varying reports may be obtained, the difference of which is positive diagnosis and no diagnosis. A marked variation has been noted in the ag-

† *Lancet*, May 26, 1947

*Read before the Section on Medicine at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949

glutinability of the same commercially prepared antigens. Also there may exist the presence of proagglutinoid zones in titers as high as 1-1200. We may conclude definitely that the agglutination test is not the solution to the problem of diagnosis in chronic brucellosis.

The next most commonly used test is probably the intradermal test. This test alone is not sufficient for diagnosis. A positive reaction indicates prior contact with *Brucella* but it does not distinguish past from active infection. Gould and Huddleston³ estimate that about 10 per cent of the population of the United States have become infected and that probably one per cent of these infected persons are ill with brucellosis at any given time. All individuals who harbor the organism may be expected to have positive skin reactions. It is not unlikely that persons who have consumed large numbers of the dead organisms as in pasteurized milk might develop some skin sensitivity. Intradermal reactions have been noted in many patients who have never had evidence of disease and positive blood cultures have been obtained in patients showing negative skin tests.

The opsonophagocytic index is a highly technical procedure subject to error. It is of questionable value and not practical to be employed in the general practice of medicine. It may be used to advantage in a laboratory where much work is devoted to brucellosis. When vaccine therapy was widely used, this procedure could forecast loss of immunity prior to the recurrence of clinical symptoms. The concurrent use of the intradermal and opsonophagocytic test has been proposed as a diagnostic scheme. This procedure is not widely used.

The most accurate means of diagnosis is the isolation of the organism, but unfortunately culture work has not been successful in chronic brucellosis, especially of the abortus variety. The growth of this particular organism requires a special technique which most laboratories are reluctant to employ. The individual with chronic brucellosis probably does not have a persistent bacteremia and consequently diagnosis by this means is impractical. In the chronic disease, the culturing of focal infections when available would be more likely to result in recovery of the organism.

The present inadequacy of the laboratory procedures may be attributed to changes that have taken place in the disease itself. Due to the different degrees of attenuation of the or-

ganism depending upon the extent and duration of the disease in any given area, it becomes apparent that the relative value of laboratory procedures varies. In a locality where the disease has been prevalent for a long period in both man and animal, less value may be attached to the agglutination test. In a like community where contaminated milk has been consumed one may expect a high incidence of positive skin reactions, even without clinical evidence of active infection. Where the disease exists in an acute form diagnosis may be based on positive agglutinations and also positive cultures.

Since definite diagnosis cannot be obtained by laboratory procedures, we must consider the clinical evidence of infection. Time does not permit the enumeration of the varied clinical manifestations presented by brucellosis. With the attenuation of the organism, the disease has lost its clinical identity and the symptom complex varies to such an extent that diagnosis is most difficult. However the presence of certain characteristics may lead one to suspect the disease.

A thorough history is most important with emphasis placed on the probable source of infection, details of past illnesses and the periodic recurrence of the symptoms. The long duration of the disease assists in arriving at a diagnosis, especially when associated with a low grade fever.

The author would set forth as a criteria for diagnosis any laboratory data of a positive nature associated with definite evidence of active infection. Diagnosis is not to be based upon positive agglutinations or skin reactions without clinical evidence of infection. Cases presenting suggestive symptoms without positive laboratory data are to be placed in a tentative status until completely worked up. Such cases must be given the benefit of differential diagnosis and other conditions ruled out as far as is possible.

Following an adequate observation period one is justified in making a clinical diagnosis of chronic brucellosis and in offering the patient some type of specific therapy. At this stage the patient is usually amenable to any suggestions.

It is rather difficult to state that the diagnosis of this disease must be made on a clinical basis when it was assumed for years that its presence would readily be detected by a simple laboratory procedure.

Since the methods usually employed for diagnosis are not entirely satisfactory in most cases and since the disease has undergone changes whereby it has developed an obstinate chronicity, other laboratory procedures more adequate for diagnosis of the chronic infection should be taught.

In 1912 Larson⁴ employed the complement fixation reaction using the Copenhagen culture of *B. Abortus* as the antigen to prove that contagious abortion present in cattle in this country was the same disease existing in Europe. Sedgwick and Larson⁵ again used the complement fixation test to suggest that bacillus abortus was pathogenic for humans long before Bang's disease in cattle and undulant fever in man were proved to be identical diseases. In 1913 they examined blood of children drinking milk from infected herds and found that some groups gave a positive fixation reaction as high as 48 per cent. They noted that many of these children were chronically ill.

These observant investigators⁶ wondered why the infection in cattle did not cause a similar disease in humans, and they checked by means of complement fixation housewives who had recently aborted especially on farms having infected herds. They found that more women gave positive fixation reactions with *B. Abortus* than with the Wassermann test. Thus some of the valuable work done in brucellosis was by means of the complement fixation test but unfortunately its significance was not recognized at the time.

Following this period only the acute form of the disease was generally recognized and the agglutination test appeared adequate for diagnosis. Consequently the complement fixation test with its more complicated technique was discarded, though it was recognized as an adequate procedure.

During the past fifteen years, the chronic type of brucellosis has come to be recognized as the major problem. Whereas much work is being done at present in therapy, little effort is being devoted to more accurate diagnosis.

It is the opinion of the author that the complement fixation test should be employed as a means of diagnosis under circumstances such that its true worth may be evaluated. It appears plausible to assume that the complement fixation test would be the procedure best adapted for diagnosis of the chronic infection just as in the case of syphilis. It has been shown that agglutinins and lysins for the *Spirochaeta pallida* are formed, but the

amounts are insignificant as in the case of chronic brucellosis.

It should be stated at this time that the indication for therapy in brucellosis must be based upon clinical evidence of infection and not upon laboratory data. The widespread distribution of the *Brucella* organism in man and animal has definitely influenced laboratory procedures.

Clinical evidence of infection is the basis for diagnosis and treatment of chronic brucellosis. This means that this disease is to be placed in the same category with the many other illnesses which must be diagnosed by the physician's sound judgment and not in the laboratory.

DISCUSSION

Dr. W. W. Lake (Pass Christian)—Dr. Schmidt has given us a paper on a subject, the importance of which I do not think is sufficiently appreciated. It is particularly applicable to us in Mississippi, with our large rural population, where great quantities of raw milk and unpasteurized milk products are consumed. He has mentioned the high incidence of brucellosis among cattle and its ready and inevitable communicability to humans who use raw milk routinely, as well as other unpasteurized dairy products such as cheese, butter, and ice cream. Furthermore, the inadequately cooked meat from diseased animals may also be a means of transmitting the disease. In support of Dr. Schmidt's statement in regard to the high incidence of brucellosis it is appropriate to recall that Lowe mentioned a 1941 survey in which eleven million cattle were tested and 38 per cent of the herds and 8 per cent of all cattle tested were infected. In our neighboring state, Louisiana, some 38.9 per cent of the herds were infected and 12.8 per cent of the cattle in the herds were diseased. Clark has also estimated that 50 per cent of all milk-producing animals in the South were in herds infected with *Brucella abortus*.

So, if such a large percentage of our dairy herds are infected, we can readily understand why many of our rural population in Mississippi may be expected to acquire the disease. Moreover, as long as these potentially contaminated dairy products are used without pasteurization in our urban or rural areas the opportunity to acquire the disease is going to continue to exist. At this point I would like to invite attention to the fact that too many people still think that the food value of milk

is lowered by pasteurization. Moreover, still too many doctors support them in this fallacious belief. I think that it has been established beyond all reasonable doubt that raw milk is no more fit for human consumption than raw meat. Let us all demand that all milk and dairy products be produced under the uniform law which was promulgated by the United States Public Health Service years ago.

Dr. Schmidt has quite properly emphasized that because of the 150 years during which this disease has been present in our dairy herds, the *Brucella* organism has become attenuated. I am fully in accord that the infection in man has likewise become attenuated and now rarely presents itself in the old classical acute form of the disease described in our standard textbooks. Rather it is most often observed as a low grade chronic infection because of this attenuation. It is now characterized by a multiplicity of symptoms such as low grade fever, chronic malaise, fatigability and the vague aches and pains seen so frequently in the so-called neurotics or neurasthenics. In fact these people are most often diagnosed as suffering from a neurosis.

When a patient presents himself with the classical complaints of the neurasthenic, and these complaints are of long duration and accompanied by a low grade fever, we should always think of chronic brucellosis and inquire into the possibilities of the patient's having had the opportunity to have acquired the disease. If such possibilities are present and other likely disease entities can be ruled out we should endeavor to confirm our impression of brucellosis by suitable laboratory methods.

I need not go into the value of the various

laboratory procedures now in common use to identify brucellosis as Dr. Schmidt has adequately covered them. I fully agree that they are grossly lacking both in specificity and in consistency. Consequently, they offer little help in the diagnosis of both the acute and chronic forms of brucellosis. Even positive blood cultures may be lacking in acute cases, finally proved to be brucellosis at autopsy. Dr. Schmidt has sounded an appeal for the complement fixation test offering the best means available today for confirming a clinical diagnosis, until a better test is developed. At present we must depend upon a high degree of suspicion that any case of low grade fever, with a neurasthenic-like syndrome, may be brucellosis if other disease entities can be eliminated.

Meanwhile let us not forget that brucellosis can be greatly reduced, if not eliminated, among humans by pasteurizing all milk products and adequately cooking meat. Until this is done we must be alert for human brucellosis.

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Smoking and the Prenatal Patient*

A Review of Recent Literature

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CIGARETTE SMOKING among women has become increasingly popular during the past twenty-five years. During these years a number of investigators have become interested in what effect tobacco smoking has on the physiology of the woman who smokes, and especially what effect the tobacco has on the fetus when these women become pregnant.

Tobacco was introduced into Europe at the time of Columbus' second voyage to America. Its chief alkaloid, nicotine, was isolated by Posselt and Reimann in Germany in 1928. The pharmacological and toxicologic character of the plant is, for practical purposes, solely that of nicotine. Nicotine is one of the most toxic of all drugs and acts with a rapidity comparable to that of cyanide. Tobacco contains large amounts of the alkaloid, and it is said that the nicotine content of one cigar approximates two lethal doses for man. The fatal dose for man is probably in the neighborhood of 60 mgm., although four mgm. or less usually produce alarming symptoms in non-habituated individuals. The fact that the leaf of the tobacco plant is smoked, however, introduces the possibility that intermediary products of combustion are in part responsible for the physiologic changes with the act. Tobacco smoke has been shown to contain as its main constituents nicotine, pyridine bases, carbon monoxide and ammonia; in addition, traces of cyanides and sulfocyanates are found. Nicotine and carbon monoxide are the only ones of these which are readily absorbed by the body, and are therefore the only elements capable of producing general physiologic effects. The carbon monoxide is of sufficiently slight saturation to be important only at very high altitudes. Therefore nicotine is the only constituent which produces any considerable physiologic effect.

Nicotine from tobacco smoke produces many symptoms, among which are the following: asthenia, anorexia, tachycardia, cardiac arrhythmias, angina pectoris, chronic cough, dyspepsia, peripheral vascular spasm, and am-

blyopia. Moyer and Maddock state that "Tobacco, regardless of its form or the manner in which it is used, produces peripheral vasospasm."

The internist warns his peptic ulcer patients, his hypertensive patients, and his cardiovascular patients against the use of tobacco. Cardiologists strongly advise their coronary occlusion patients to abstain from the use of tobacco. The surgeon will practically refuse to treat a patient with thrombo-angiitis obliterans unless he first agrees to stop smoking entirely. Recently Dr. Alton Ochsner made the following statement: "Cancer of the lung is increasing probably more than any other cancer of the body. It is a disease primarily of men. While the cause is not known, I believe that smoking is the most important precipitating factor." The ophthalmologists state that smoking must be strictly prohibited in tobacco amblyopia.

If this poison, nicotine, is regarded as seriously affecting the course of the above mentioned diseases, and produces the symptoms previously mentioned, how then does it affect the physiology of the woman who is pregnant, and what effect does it have on the fetus? What must the obstetrician and the general practitioner advise his prenatal patients regarding cigarette smoking?

There have been a number of experimental studies that show the effect of cigarette smoking on various organs and functions of the body. Phillips showed that smoking was a definite factor in sterility in his experiment. Schoeneck used laboratory animals to show that those exposed to cigarette smoke in the approximate equivalent of 20 cigarettes per day in the human had a stillbirth rate ten times as great as that of the controls. Short, Johnson, & Ley state that symptoms relating to the respiratory, circulatory, gastro-intestinal, and nervous systems are definitely increased among smokers.

Results of the studies of Sontag & Wallace showed that there is a definite and a real effect of maternal smoking upon the rate of the fetal heart. The increase appears to be due to the passage of the toxic products of to-

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bacco smoke into the fetal circulation where they affect the fetal heart rate in the same way that the adult heart rate is affected. Thompson states that the elimination of nicotine from lactating breasts has been demonstrated and confirmed by biologic tests. From his review of the literature and from his personal observation, it would appear that smoking in moderation probably is a minor factor in influencing lactation. He further states that while excessive smoking and adequate lactation usually are not noted in the same individual, as yet there is insufficient evidence to conclude that one is the cause, the other the effect. Due to possible unproved effects upon the digestive processes of the infant, excessive smoking should be forbidden the nursing mother. However, the impression, frequently recorded, that women who smoke usually do so in excess would seem to be as inaccurate as impressions generally are. Thomson further states that opinions as to the effect of nicotine upon growth vary widely. However, when one considers the statement of Cushny that "Nicotine is about as poisonous as prussic acid," it seems logical to consider that even minute quantities of nicotine administered through breast milk might upset the digestive processes to the extent of endangering the early growth of delicate babies. As might be expected, and probably due to the personal bias of the various investigators, there is also a wide divergence of opinion as to the possible effects of nicotine upon fertility and lactation. Thompson says he has yet to observe a patient averaging eight (8) or more cigarettes daily whose lactation was adequate at three months. And, as a routine, he advises his patients to moderate their smoking during pregnancy and to abstain entirely during lactation.

In 1927 Hatcher and Crosby demonstrated the presence of nicotine in the milk of a nursing mother who had been smoking 20 to 25 cigarettes daily. Doctor Thompson thinks it is difficult to understand how the importance of their finding has been so generally overlooked, as it is scarcely mentioned by other workers in nicotine research, and seemingly has been missed entirely in obstetric literature. He says that he had not noted that nicotine had been detected in perspiration and that the breasts were considered as modified sweat glands. Correlating these statements resulted in the hypothesis that lactating breasts would assist in nicotine elimination and gave rise to the questions as to whether the nicotine so ex-

creted would in any way affect the nursling, and whether lactation would be influenced. Emanuel reported in 1931 that he found nicotine in both milk and urine when the subject smoked 7 or more cigarettes within two hours of obtaining the samples. This was most concentrated in four to five hours, and occasionally was noted seven to eight hours after smoking.

Perlman et al. of Philadelphia reported in 1942 in *The Journal of the American Medical Association* on their experimental work on *The Excretion of Nicotine in Breast Milk and Urine from Cigarette Smoking*. Some of their conclusions were: 1) Nicotine was excreted in the milk and urine of all the mothers who smoked cigarettes; 2) much larger quantities of nicotine were excreted in the urine than in the milk; 3) there was a definite correlation between the quantity of nicotine excreted in the milk and urine and the number of cigarettes smoked; 4) a tolerance to nicotine may be a factor which prevents this toxic drug from affecting the infants and the lactating ability of the mothers.

In 1936 Dr. Irene Greiner reported a case of nicotine poisoning in a nursing infant three weeks old. The diagnosis was made when it was learned that the mother smoked between 35 and 40 cigarettes a day. The baby was treated by the simple expedient of forbidding the mother her cigarettes and allowing the baby to continue to nurse the breast. The symptoms of restlessness, diarrhea, vomiting, colic, insomnia, anorexia, fever, and oliguria promptly relented.

Dr. Alexander Campbell of the University of Michigan has written extensively on "Excessive Cigarette Smoking in Women and its Effect Upon their Reproductive Efficiency." He has this to say: "Excessive cigarette smoking in certain maternity cases is detrimental to the patient's health; their nervous systems are rendered unstable, and their digestive functions are impaired, their respiratory and circulatory systems are definitely affected, and, in a general way, the women who smoke do not undergo the ordeal of pregnancy, parturition, and lactation with the normality which is observed in other women who either abstain entirely, or who indulge in smoking very moderately. Surely the maternal organism, already overworked by the physiologic demands of pregnancy, must suffer from the absorption of such a poison as nicotine, which would exert a deleterious influence upon their health. It is a general observation that few women

smoke excessively who are busily and happily occupied and that idleness plays an important role in the causation of this habit. The indulgence of so many American women in the use of barbiturates and other sedatives for insomnia is frequently associated with excessive smoking. It would probably be fanatical to state that all women should abstain from smoking, but it is a responsibility of every physician to warn the young women of this country of the dangers which attend excessive indulgence and of the susceptibility of many to the toxic effect of nicotine, even in a moderate use of cigarettes. Physicians should particularly interest themselves in the question of smoking among young girls during the period of adolescence, at which time this habit may easily produce endocrine imbalance, and at which time self control, a proper attitude toward matters pertaining to sex, and the development of normal maternal instincts should progress without interruption. Excessive cigarette smoking has a degenerating influence in many ways upon every woman and it is prejudicial to her highest efficiency as a sweetheart, a wife, or a mother. One objection to excessive smoking in women is the difficulty they experience in controlling the habit when they become pregnant. A number of them admit that they cannot limit their smoking during pregnancy in spite of the fact that they are conscious of the unfavorable symptoms produced by it. So far as the clinical symptoms are concerned which arise from excessive smoking or from susceptibility to nicotine, there is no doubt whatever that nearly all of the important functions of the body are to some extent disturbed by it, and physicians should endeavor to evaluate properly its influence and specifically advise each patient who insists on smoking according to her sensitivity to it."

It would seem then that excessive cigarette smoking should be avoided during pregnancy.

We are inclined to agree with Doctor Campbell in advising moderation in smoking in women, and especially among the young adults who are to become the mothers of our nation. During pregnancy and the puerperium, and during the period of lactation, smoking should be reduced to a minimum, namely to one to five cigarettes a day. Until we can prove that excessive smoking is **not** harmful in pregnancy, we should continue to caution against it.

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Lower Nephron Nephrosis (Acute Renal Failure)*

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A WELL ESTABLISHED sequence of symptoms known as lower nephron nephrosis, by others called acute renal failure, acute renal insufficiency, hemoglobinuric nephrosis, or acute toxic nephrosis, is a not too infrequent complication of a wide variety of clinical entities, both medical and surgical. Unfortunately, even today knowledge of the existence of this syndrome is not commonly possessed by the average medical practitioner. Confronted by sudden renal failure complicating some other clinical condition, an attitude of hopelessness is too often assumed. However, when the pathological physiology of lower nephron nephrosis is understood, the outlook need not be so dire. With immediate and understanding therapy the patient may be tided over his anuria for the renal lesion may be completely reversible. Unskillfully managed the always high mortality rate will be only further increased. An attempt will be made here to discuss the nature of this syndrome, the type of management indicated and to present two cases with a fatal termination which went unrecognized and hence were inadequately treated.

Historically we now realize that sudden renal failure was recognized by German clinicians and pathologists in World War I, as a complication occurring among their wounded. Editorial attention has been called to Minami's published review of these cases as long ago as 1923. Moon also points out that many of the features of this condition were recognized even earlier by Sir William Osler and his contemporaries and were related to entities then known as acute parenchymatous nephritis or acute tubular nephritis. He further believes that the lapse in recognizing it may be attributed to the great popularity at a later period of the Volhard and Fahr classification of renal diseases, from which acute parenchymatous nephritis and acute tubular nephritis were omitted. It remained for the British pathologists, Bywaters and Beall and Bywaters and Dible, to resurrect interest in the syndrome by their publications in 1940 and 1941 of their observations on the crush injuries suffered in the London air raids. They pointed out the association of renal failure with demon-

strable kidney lesions found in victims suffering from crushing injuries to muscles. With the awakening of interest caused by this re-discovery, it was not too long before clinicians found that these renal changes were not specific for the crush syndrome alone. Tracy B. Mallory emphasized the similarity of this syndrome to what he termed hemoglobinuric nephrosis. Colonel Balduin Lucké of the Army Institute of Pathology proposed the term lower nephron nephrosis to define it. He had noted the marked similarity of the renal lesions which occurred in a great variety of clinical conditions having the added complication of a renal shutdown.

Aside from the crush syndrome almost identical lesions have not been found associated with the following conditions: hemolytic transfusion reactions, non-traumatic muscular ischemia, blackwater fever, intravascular hemolysis associated with the use of distilled water, to irrigate the bladder after transurethral prostatectomy, prolonged shock, toxemias of pregnancy, electrical injury to muscle, heat stroke, uretero-placental damage, after abortions, acute pyelonephritis, congestive heart failure, chemical or vegetable poisoning (bichloride of mercury, carbon tetrachloride, mushroom, etc.,) sulfonamide sensitivity, hemolytic anemia, acute pancreatitis, alkalosis after vomiting, quinine sensitivity, fulminating infections, Caesarean sections with extravasation of blood into the uterine muscle and prolonged surgical procedures associated with extensive manipulation of tissue. This list per necessity is only partial. Time and experience will add to it.

It is to be remembered that regardless of the original presenting disease entity, certain common factors must appear in order to initiate the complicating picture of lower nephron nephrosis. In all cases there occur at one time or another the factor of either tissue and/or blood destruction. An additional potentiating factor operating in all cases is the presence at some time of various grades of shock of varying duration. Once the process has been started the unfolding of the clinical, pathological and laboratory picture is essentially the same in all instances—varying only as to degree and outcome.

Although modified somewhat by the original disease, the clinical picture of lower nephron nephrosis once precipitated is much the same. Following recovery from the initiating factors of shock and blood or tissue destruction, the patient may not look critically ill. He may present no more than the picture of his original illness—with its apparent mildness or severity. Presently, however, weakness, nausea, emesis, abdominal pain and, at times, backpain appears. About this time it is observed that a progressive oliguria or even sudden anuria has occurred. The scanty urinary output may have been overlooked, at first having been masked by concern over the severity of the original disease. Hypertension, never excessive, but usually of moderate degree, develops following recovery from the previous low shock readings. Edema is rarely prominent unless heart failure supervenes, largely as a result of the all-too-frequently, ill-advised administration of excessive quantities of fluid in an effort to "flush the kidneys." Aware of the pathologic physiology of the syndrome, the wise physician realizes the anuric kidney cannot secrete urine, no matter how great the fluid intake. Rarely is the edema due to hypoproteinemia.

As might be expected, suppression of the urine for several days brings on the clinical syndrome of uremia. It becomes progressively more profound, terminating in coma or death unless renal recovery supervenes sufficiently in time. Renal function may be resumed in three or four days after the shut-down or ten to twenty days may be required. Although the mortality rate ran as high as 90 per cent in Lucké's series, a progressively better understanding of the pathological physiology of the syndrome has materially lowered this figure. Some cases, of course, die of their primary illness. Still others die of pulmonary edema, potassium intoxication or hypochloremic or hyponatremic complications.

Occurring concomitantly with the developing clinical picture there are certain accompanying laboratory features of diagnostic importance. The urine, if any is available, is highly acid, of a low, fixed specific gravity of about 1.010 or less. It may be smoky or grossly bloody in appearance and usually gives a positive benzidine reaction, indicating the presence of heme pigment. Whether it is from hemoglobin or myohemoglobin may be determined by the spectroscope. Albumin in varying amounts is present. Microscopically, granular and pigmented casts and RBCs are

found in the sediment. The pigmented casts found are derived from the heme pigment.

Blood chemistry studies reveal the usual retention of nitrogenous products brought about by any severe renal dysfunction. The blood urea, non-protein-nitrogen, creatinine, inorganic sulphates and phosphates show an increase. The blood potassium may be increased. There may be a decrease in the alkali reserve with a shift in the CO_2 combining power. Although the blood chlorides are usually reduced, at times they are elevated. Hypocalcemia may occur.

The pathological aspects of lower nephron nephrosis aside from those of the primary disease is largely restricted to the kidneys. Occasionally small petechial hemorrhages may be found on the serus or mucus surfaces. Liver pathology may also be present, Bywater and others having reported the occurrence of central liver cell necrosis.

Grossly the kidneys are swollen, edematous, flaccid. The capsule strips easily showing a smooth, pale, wet surface. On the cut surface the widened cortex bulges, is pale and moist and stands out in marked contrast to the dark streaked medulla.

Histologically it has been shown by Lucké, Mallory and others that following a period of lipid vacuolization of the ascending limb of Henle's loop there is a precipitation of pigment casts in the distal convoluted and collecting tubules. These pigment collections frequently give rise to dilatation of the distal convoluted and proximal tubules. Necrosis and regeneration of the epithelium in the ascending portions of Henle's loop and in the distal convoluted tubules then occurs. Two weeks after onset re-epithelization of the tubules is usually essentially complete. It is this very evidence of the healing power of the kidney within two weeks which should encourage us to make every effort to prolong the patient's life during this reparative period, for then recovery should be possible. During the active degenerative process the glomerular capillaries remain essentially unchanged. The interstitial spaces of the kidney may be edematous. Rupture of the dilated necrotic tubules is frequent and occasionally occurs into a thin-walled vein resulting in thrombosis. Lucké states that relatively slight or no structural changes are seen in the upper parts of the nephrons, renal corpuscles, proximal and intermediate segments.

There are several theories extant as to the *modus operandi* of the production of the lesions of lower nephron nephrosis. Van Slyke's theory of renal vaso-constriction points out that in shock the renal blood flow is diminished along with the blood supply to the muscles and skin. This is part of the body's defense mechanism of peripheral vascular constriction to conserve and make available the diminished blood volume so that it will be adequate to supply such vital organs as the brain, heart and lungs. Accompanying this protective renal ischemia there is necessarily decreased renal function even to the point of anuria. If the period of shock is slight and of short duration, the renal ischemia is also minimal and brief. Hence the renal cells are not injured and normal kidney function returns shortly after the termination of shock. If, however, the shock is prolonged and severe then there is damaging renal ischemia of varying degrees of severity. Thus with the recovery from different intensities of profound shock we have varying degrees of renal damage and there may be a short or long delay in the return of normal kidney function with resultant oliguria or anuria. If marked injury has occurred to the kidneys they may not recuperate in time to circumvent fatal uremia.

Van Slyke further emphasizes that uremia only develops from shock which is within a fairly limited zone of duration and severity, great enough to cause serious renal damage. When shock is severe enough, death results from circulatory failure, long before the kidney lesion can give rise to uremia. Therefore, he points out that **lower nephron nephrosis** is found only in that narrow zone from which individuals have escaped death from shock by a tenuous margin.

Once the renal tubules have been injured by the ischemia, it is believed that the cells of the tubular epithelium lose their normal powers of selective reabsorption. They no longer return from the glomerular filtrate to the blood only the solids and water whose retention is essential to the organism, while barring the return of waste products such as urea, uric acid, creatinine and excess water and electrolyte. Now the devitalized tubular epithelium permits all of the glomerular filtrate, water, solids and waste products to be reabsorbed back into the blood of the tubular capillaries. Anuria and uremia result.

Trueta and his collaborators on the other hand suggest from a series of animal experiments that blood circulating through the kid-

neys may follow one of two alternative routes. They propose that in lower nephron nephrosis that by a short-circuiting process all or part of the blood that normally flows through the peripheral two-thirds of the cortical glomeruli is detoured directly through the medulla. This shunting process is supposed to occur through the juxta-medullary glomeruli and produces cortical ischemia. The kidney tubules supplied by these by-passed glomeruli are thereby deprived of part or all of their blood supply and may be injured if ischemia is severe and prolonged, thus giving rise to anuria.

Peters has offered the idea that the anuria is due to renal edema, which by means of increasing the intra-renal pressure serves to prevent the filtration processes of the glomeruli. Others, however, have pointed out that the anuria develops before there is any evidence of the existence of kidney edema.

Many have attempted to place the blame for the renal pathology on the action of a circulating nephrotoxin which would ordinarily be eliminated by a normal functioning liver if the nephrotoxins were released slowly enough into the circulation for it to detoxify them. Some of the nephrotoxins are exogenous such as heavy metals, sulfonamides, carbon tetrachloride, alcohol and mushrooms while others might be endogenous resulting from the injured tissues or from degeneration of heme compounds. Lucké points out that the mode of action of these various nephrotoxins is difficult to evaluate. Some might affect the tubular epithelium directly while others might bring about the primary renal vasoconstriction with its attending anoxemia, injury to the tubular cells, and resulting anuria.

Before discussing treatment it might be of value to enumerate certain known facts which might influence therapy. We must never lose sight of the fact that we are dealing with a complication which is self-limited. Our problem then is to insure the patient's survival until the tubular epithelium regenerates and urinary excretion returns. We know tubular regeneration is complete about the fourteenth day. Lucké found in 100 fatal cases that death occurred in fourteen days in 95 per cent, in ten days in 86 per cent and in six days in 48 per cent. None died after twenty days. Strauss points out that other factors not related to kidney damage must play a role in the 48 per cent dying within six days. Following a survey of the literature prior to the use of parenteral fluids, he collected a number of authentic cases which survived com-

plete anuria for periods ranging from three, four, five and even six and seven weeks. He, therefore, concludes that it is unlikely that renal insufficiency per se would ever lead to death within six days. Generalized edema as well as pulmonary edema is a common autopsy finding. In fact, pulmonary edema is a frequent cause of death. In his cases he noted that the level of the non-protein-nitrogen appeared to play little part in the outcome; lower values being more frequent among the fatalities, than in those who eventually recovered. Potassium intoxication from endogenous protein catabolism has been mentioned by some as producing death through its cardiac action. Aside from the danger of excessive hydration, many other forms of electrolyte imbalance and intoxication have been known to occur in these cases. These facts merely serve to emphasize the necessity for a complete understanding of the pathological physiology by the clinician in lower nephron nephrosis. In addition, before undertaking its treatment, he must be able to depend upon the close coöperation of a reliable laboratory.

Whenever possible efforts should be made to avoid situations that might precipitate lower nephron nephrosis. In such a category would fall those cases due to hemolytic transfusion reactions, quinine and sulfonamide sensitivity, and cases brought on by the use of carbon tetrachloride and the heavy metals.

Active treatment is now generally divided into three stages. In the first stage, the period of shock or renal ischemia, every attempt is made to terminate the shock as rapidly as possible by the adequate use of compatible whole blood transfusions, plasma, serum albumin or saline infusions. The medium used depends upon the etiology of the presenting condition, i.e. trauma, hemorrhage, burns, or dehydration. In cardiac shock infusions are not required, although some are using small quantities of plasma.

The second stage, or period of renal damage, is reached when oliguria or anuria occurs. Here measures are begun to maintain the patient in good electrolyte, and fluid balance and to preserve his nutrition. The parenteral administration of fluid assumes a position of extreme importance for on this may depend success or failure. Over-administration can cause fatal cardiac or pulmonary edema. In general the patient may be given daily 1000 cc. of 10 per cent glucose in distilled water, plus a volume equal to the urinary output, making additional adjustments for

fluids lost by excessive sweating, vomiting, diarrhea, fever or through nasal tubes. The amount of sodium chloride given in the parenteral fluids is determined by the plasma chloride values from day to day. The added glucose serves to provide a high caloric intake and prevent the breakdown of endogenous protein. In the presence of acidosis 250-500 cc. of sodium bicarbonate in 5 per cent may be given intravenously. Others recommend the use of 1000 cc. of sixth molar sodium lactate solution. In the absence of vomiting Findley feels it is safer to give 20-30 grams of sodium citrate orally daily until the deficiency in base is met. In the presence of vomiting the sodium citrate could be given by duodenal tube. Parenteral fluids should be fortified with vitamins B and C. Hypocalcemia which is sometimes present is combatted by giving calcium gluconate intravenously daily in 20 to 40 cc. doses. At times some form of digitalis may be needed for a failing heart. If and when the patient is able to eat he should be given a diet high in carbohydrate and fat and low in protein, thereby maintaining nutrition and at the same time preventing increasing azotemia and further renal damage, from endogenous protein catabolism. If unable to eat, i.e. vomiting, feed by duodenal intubation.

Should no urine be excreted by the seventh day, and in the presence of a deepening clinical uremia (confirmed by blood studies), thought may be given to the use of some extra-renal means to relieve the uremia. Such methods have included continuous lavage of the stomach and upper small bowel, peritoneal lavage and the artificial kidney. The latter two are in the experimental stage and while interesting will probably, sooner or later, be discarded. Numerous other methods have been tried and found wanting to provoke the flow of urine. These include numerous diuretics, intravenous sodium sulfate, capsulotomy, decapsulation, hypertonic glucose and saline solutions, spinal anesthesia, splanchnic block, x-ray or diathermy to the kidney region and many others.

The third phase of treatment is begun when the stage of diuresis and recovery is reached in the second or third week. This is another critical period because of the large volume of urine voided and the excessive loss of sodium and chlorides in it. Frequent determinations of plasma chloride and serum sodium levels are needed to avoid hypochloremia and hyponatremia. Fluids should be administered to make up for the total daily urinary volume plus

1000 cc. for insensible loss. Enough sodium chloride is given to equal the amount found in the preceding day's urine. Many patients have died on the threshold of recovery because of inadequate attention to these details of dehydration, chloride and sodium loss, occasioned by the period of diuresis.

Cases

The following cases were seen in consultation eighteen hours and one hour before death. Both had been unrecognized and had received large quantities of intravenous fluids. In both insufficient laboratory control was evident.

Case I. A 21-year-old white female, para I, gravida II, with history of moderate pre-eclampsia with first pregnancy was first seen in second pregnancy at 7½ months with blood pressure 140/90. Month later treatment begun for pre-eclamptic toxemia and blood pressure 152/98. Admitted to hospital month later in rapid labor and delivered of viable child with blood loss of about 50 cc. For amnesia demerol 100 mg. and scopolamine gr. 1/150 given. Anesthesia, nitrous oxide and oxygen. No admission blood pressure secured because of rapidity of labor. Two hours postpartem blood pressure 210/120 and 200 cc. of 25 per cent glucose in distilled water with 20 cc. of 10 per cent MgSO₄ given. Blood pressure not lowered so patient given additional glucose and MgSO₄. Blood pressure dropped to 120/100. Patient voided 750 cc. macroscopic bloody urine, 4 plus albumin; sp. gr. 1.020. First postpartem day: B.P. - 140/100; voided 240 cc. urine, dark with hemolyzed blood; one convulsion during day received 2190 cc. I.V. fluids. Second postpartem day: B.P. ranged from 210/130 to 144/100. Voided 92 cc. urine with 1 plus albumin, hemolyzed red cells, specific gravity 1.005; received 2000 cc. I.V. fluids. Third postpartem day: voided 240 cc. urine, 2 plus albumin; B.P. ranged 150/110 to 202/100; patient complained of difficulty in focusing eyes; coma and convulsion during day; received 2675 cc. I.V. fluids. Fourth postpartem day: urine output 225 cc.; B.P. 140/90 to 190/119; convulsions and coma; received 1045 cc. I.V. fluids. Expired fifth postpartem day with myocardial failure; received 500 cc. I.V. fluids; received rapid digitalization with crystodigin this day. Blood N.P.N. rose from 37.5 first day to 54.4 day of death.

Autopsy: Cut surface liver a mottled tawny yellow color. Cut surface kidneys revealed yellowish cast and subepithelial hemorrhages in calyces and pelvis. **Microscopically:** Peripheral

necrosis of liver lobules with marked congestion and cloudy swelling. Kidney revealed swollen avascular glomerular tufts; marked cloudy swelling of convoluted tubules. Pathologist stated liver and kidneys revealed picture typical of toxemia.

Case II. A 40-year-old white female, para I, gravida II. First seen at five months. Membranes ruptured spontaneously at 8¾ mo. Admitted to hospital two days later with uterine contractions every eight minutes, and complaining of fever and sore throat. Fever 101° and blood pressure 138/78. Pharynx red. No fetal heart sounds. Cephalic presentation. Penicillin 50,000 units q. 4 h. begun. Ten hours later patient had chill, and fever went to 105°, pulse 150. Caudal block with 1 per cent procaine given but patient precipitated while being draped. Foetus stillborn, appearance of being dead 24 plus hours. Blood pressure dropped to 60/40 postpartem. Digitalized. Bladder catheterized at delivery of large volume urine. Streptomycin started and blood pressure rose to 88/64. Blood pressure remained around 62/44 to 96/74 for 30 hours in spite of 1000 cc. plasma, 500 cc. blood transfusions and 1000 cc. glucose in first 24 hours for postpartem shock. Became distended; had nausea, frequent vomiting. Relieved by Miller-Abbott tube. 190 cc. urine by catheter in 48 hours. Given 2500 cc. fluids on second postpartem day and passed 126 cc. urine. In fair shape and eating on third, fourth, fifth postpartem days and passed 390 cc. and 334 cc. urine on these days. Blood pressure remained between 72/? and 96/74 on second day. Blood streaked sputum on sixth day. Blood pressure 280/20 on seventh day. On eighth day 2280 cc. and blood pressure 162/60. On ninth day suddenly became irrational, cyanotic and had fever 103°. B.P. of 132/64. Became comatose. Passed 1210 cc. urine. On ninth day before death, postpartem blood cultures negative. No blood chemistry done.

Pathologist reported kidneys showed well developed picture of lower nephron nephrosis with changes in lower nephron with degeneration of tubular, epithelium and heme casts in collecting tubules. Marked interstitial edema. Bowman's spaces appear enlarged.

SUMMARY

The history, clinical, laboratory, pathology and pathological physiology of lower nephron nephrosis has been discussed.

Emphasis has been placed on the fact that this syndrome is self-limited, and that tubular

re-epithelization is essentially complete in fourteen days. Our problem is to keep these patients alive during this reparative period.

The treatment of this syndrome has been outlined through its various stages, the first stage or stage of shock or renal ischemia; the second stage or stage of renal damage or anuria; and the third stage or stage of diuresis or recovery.

Treatment resolves itself into prompt appropriate measures to terminate shock; the judicious administration of fluids; the regulation of electrolyte balance and the preservation of nutrition. A high carbohydrate, high fat and low protein diet has a very salutary effect.

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The annual neuropsychiatric meeting at the VA Hospital, North Little Rock, Arkansas, for 1950 will be held at that hospital on February 23-24, 1950. A number of nationally known leaders in neuropsychiatry and related fields are expected to participate, including Drs. Walter Alvarez, Daniel Blain, Edwin F. Gildea, Karl Menninger, John N. Rosen, and others. There will be no charge for registration and attendance of all interested personnel. Further information may be obtained by writing: Director of Professional Education, VA Hospital, North Little Rock, Ark.

Pitfalls and Safeguards in Medullary Fixation of Fractures with the Longitudinal Pin

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FIFTH AND FINAL ARTICLE

BEFORE EMBARKING upon medullary fixation in a given fracture, the surgeon should ask himself, "Will pinning give a better result? Does the result justify the risk?" Experience has shown that in many selected cases, fixation can be accomplished more easily and more certainly than by previously described methods and, when properly carried out, healing can be expected with more confidence, and the return of the member to its usual function can be accomplished more rapidly. However, with this, as with any new principle, certain fundamental knowledge is necessary to a successful application, and this should be predicted by the fact that it should be attempted only by those men who have had adequate surgical training to engage safely in open operative procedures upon fractures.

To the well-trained surgical mind, the fractured extremity should be relatively transparent so that the composite picture formed from the study of the extremity, the nature of the injury, and the x-rays, should show to the mind's eye the intricate mechanisms of muscle pull, bone displacement, and trauma to the surrounding deep soft structures. In medullary fixation, the structure of the bone itself takes on infinite importance. It must be appreciated that there is an enormous difference in the structure of the medullary canal and of the cancellous bone in different ages, that there is a wide variation in the diameters of the medullary canals of various individuals, as well as the shape and structure of the bones. It should be pointed out that the bone overlying the cancellous extremity is very thin cortical bone, while that of the shaft is thick compact bone. In the young, cancellous bone is firm and strong, with denser overlying cortical bone, whereas in the aged, the cancellous bone is much softer and more brittle. At times the extremity of the bone is almost hollow in the aged. In certain diseases, and following prior injuries, at times the medullary canal is

occluded, emphasizing the fact that preoperative x-ray films should be studied carefully to determine the size and shape of the medullary canal.

The surgeon inexperienced in this method must limit himself in his early cases to fractures of the shaft of the long bones. This will permit a familiarity with the technique with a minimum of pitfalls. Fractures near joints can be treated very effectively by this method, but require more experience for successful application. Comminuted fractures and long oblique fractures frequently require supplemental fixation such as circular wires or Parham bands.

Selection of Cases

Children: Generally, open reduction is rarely indicated in young children and a pin should not unnecessarily be driven across an epiphyseal line for fear of growth disturbance. Some injuries, however, such as certain fractures of the condyles of the humerus, are destined for deformity without open operation. In those instances in which the nature of the fracture is such as to justify the risk, then open or closed pinning should be done advisedly, and the pin should be removed as soon as healing will permit. In such cases, it is well to leave the head of the pin prominent beneath the skin to facilitate its later removal.

The Aged: Age is an indication rather than a contraindication for the pinning of many fractures. In many fractures near joints this procedure can be carried out as a relatively simple blind or closed procedure, allowing almost immediate restoration of function to the part. This is particularly true in Colles' fracture¹ and in fracture of the neck of the humerus.² It should be remembered, however, that the cancellous bone in the extremity of the aged is less firm than in younger individuals.

Compound Fractures: Nineteen compound fractures have been treated by us utilizing the longitudinal pin with no infection in the series. This is a most valuable field of application for

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the principle because it permits accurate realignment and secure fixation of the fracture with no foreign material implantation between the bone and the surrounding soft structures from which the bones must derive its nourishment. The operation must be undertaken in the first few hours of injury before the contamination becomes infection, as the passage of the pin through an infected area is inviting a generalized bone infection. As in all open reductions of compound fractures, the extremity should be saved and thoroughly scrubbed with surgical soap and water and irrigated with copious quantities of normal saline solution. This should be followed by an adequate debridement, removing contaminated skin, fascia, and devitalized muscle tissue. After the bone has been reconstructed and fixed with the pin, it then becomes necessary to close all dead space to eliminate blood pockets and to do proper plastic procedures upon the skin and fascia so that the bone is well covered. To aid further in the healing of the extremity, we have found the application of a compression bandage, constructed of Kerlex gauze overlaid by elastoplast, and upon this the application of plaster splints, to be an excellent temporary postoperative dressing. The elevation of the extremity and chemotherapy are also necessary.

Nonunion and Delayed Union: A great deal can be accomplished in cases of this type by medullary pin fixation because union can frequently be encouraged by aligning the bones accurately upon the pin, allowing the physiological muscle pull of the extremity to bring about contact compression of the bone ends. This is particularly true of the femur,³ where the musculature is strong. In the humerus,⁴ we have weak musculature to assist us, and very vigorous muscle activity must be encouraged in order to bring about firm bone contact. In the forearm⁵ and leg, there being two bones to contend with, the uninjured bone often rigidly maintains a distraction of its fractured neighbor, so that in the forearm, it often becomes necessary to use supplemental splinter grafts, and in the lower leg, osteotomy of the fibula might be necessary to provide the desired bone contact.

Geographical: Certain parts of the body are better suited to intramedullary fixation than others. The shafts of the humerus, the radius and ulna are ideally suited. In the femur, the upper two-thirds of the shaft is well suited, but fractures above the lesser trochanter and fractures of the lower third are not adaptable

to single pin fixation and, in these regions, the technique must be modified. For instance, in the lower third of the femur² and in supracondylar fractures, it is necessary to drive two pins upward from the outer surfaces of the condyles of the femur in order to accomplish secure fixation. This may often be a closed operation. In the tibia, only the mid-third is ideally suited to single pin fixation because the upper and lower extremities of the medullary canal are trumpet shaped. After experience has been gained, a wide variety of fractures of the upper and lower extremities of the tibia might be fixed by the use of multiple pins. In the olecranon, the muscle pull is working against us to result in distraction and it is often necessary to use supplemental wire fixation. In the clavicle and in the jaw,⁶ we do not have any longitudinal muscle pull to accomplish our contact compression, and it is well to use an additional wire suture.

Rotation has not been found to be an important factor in the majority of cases. Should rotation be feared, an additional wire suture through the ends of the bones is at times helpful. It should be repeated that the bone structure at the extremities of the shaft is much softer and the cancellous bone less firm in the aged, so that while secure anchorage might be gained with the pin in a young individual in fractures of these regions, it should be used cautiously in elderly individuals. A particular example is the sub-trochanteric fracture of the femur. Secure fixation can often be accomplished in young individuals, but in elderly people, or those who have been in bed for a considerable period of time, the bone structure in this region is too soft to accomplish secure fixation unless the fracture line is considerably below the lesser trochanter. The crossed-pin principle is indicated in intertrochanteric fractures.² and ³

Time of Operation

A large percentage of our cases are operated upon as emergencies because they are seen soon after the accident. One must be certain that the patient's general condition, as regards shock and complicating injuries, is good before undertaking operation immediately following the injury, but in many cases, a much better result can be secured with more rapid recovery utilizing early operation. In fractures of the ankle, there is usually a large hematoma formation and the immediate operation allows the evacuation of the blood clot with the restoration of both the bone and soft

tissues immediately and the subsequent lessening of swelling and the need for nature to absorb the large blood clot before the soft tissues can return to the proper relationship for normal healing. Many of these fractures can be done by the closed method, and the operation can be performed much more simply before swelling has occurred to obscure landmarks and the fragments can be manipulated into position with more ease and accuracy. For instance, in the Colles' fracture, it is necessary to palpate accurately the styloid end of the radius, and this is much more difficult after swelling has occurred. Simple fractures of the tibia can often be pinned by the closed method with relative ease before too much swelling has occurred. Generally, fractures of the shaft are open procedures, and fractures near joints closed.

When a case is seen late, and extensive swelling has already occurred, it is then best to defer the operation, as pointed out by Pick,⁷ to the time interval of one hundred to two hundred hours after the injury when the period of reaction has subsided.

Position of Patient

Most operations are carried out with the patient in the simple supine position on an ordinary operating table. Fractures of the clavicle and humerus are usually treated in this position with the arm by the side of the patient. Fractures of the forearm can be handled more conveniently with the forearm draped across the patient's chest. In fractures of the femur, the fracture table is usually utilized with the patient in the supine position so that the traction piece can be used. Upward pressure upon the lower fragment is frequently an aid, particularly in fractures of the lower third of the femur and in those instances in which closed blind pinning is done for supra-condylar fractures and for fractures of the lower third.

In fractures of the shaft of the tibia, the operation is carried out with the patient lying supine, but with the knee flexed 90° and hanging off the edge of the table to utilize the weight of the foot and gravity for traction.

X-ray Control

The portable x-ray machine is essential. We believe that the fluoroscope should be avoided because the surgeon might become so intent upon his reduction that a burn could be accidentally incurred. Frequent x-ray films are

essential, and whenever any doubt arises during the procedure, the position of the bones and of the pin should be checked with the x-ray. It is probably a good precaution to let different members of the operating room staff hold the film so that if many operations of this type are done, no one person will receive too much x-ray. The extremity is usually draped in such fashion that the cassette can be placed beneath the sterile drapes. **WHEN THE OPERATION IS COMPLETED, ALWAYS MAKE A FINAL X-RAY CHECKUP BEFORE CLOSING THE WOUND; THINGS ARE NOT ALWAYS WHAT THEY SEEM.**

Necessary Instruments

Why the Longitudinal Pin?

The first pin designed for medullary fixation was described by us in 1938.^{8,9} It was a modified Steinmann pin with a collar to prevent its migration into the bone. It had the objection of protruding into the soft tissues or of emitting through the skin, and its application was limited to the humerus, upper portion of the shaft of the femur, and to the ulna, because of its straight construction, and the necessity for having to introduce it through the end of the bone.

The diamond shaped Hansen-Street nail¹⁰ appears to be very efficient for the shaft of the humerus and upper two-thirds of the femur, but has the same disadvantages of our earlier pin in that it is a straight, rigid rod which must project into the soft tissues, and is limited in its application. It is designed to fit snugly within the medullary canal and migration of the nail is prevented only by the accurate choice of the nail, both in length and diameter. It can now be applied retrograde without need for special instruments but does require a special extractor for its removal.

It is appreciated that the elaborate technique and armamentarium devised by Kuntscher¹¹ gave great emphasis to the method in central Europe, and has given rise to certain modifications of the Kuntscher nail now in use in this country. The articles of Robert Soeur¹² of Belgium and of Westerborn of Sweden,¹³ and the book of Bohler,¹⁴ **Kuntscher Nailing**, have aroused American interest in the principle. Yet, while building up interest on the one hand by showing the many advantages of medullary fixation, the development of the method has been retarded on the other hand because of the complicated nature of the operation, the need for various reduction frames,

and the necessity of investing in a large variety of instruments for the introduction and extraction of the nails.

It has been pointed out by Bohler in his book **Kuntscher Nailing** that the nails are designed to secure rigid fixation by being properly impacted in the medullary canal. Because of the rigidity of the nails and the necessity for exact fits both as to length, diameter, and curve, one is obliged to have an extremely wide assortment of nails of the various types with assortments to provide the curve necessary for a specific bone. In addition, several diameters are necessary for each specific bone to insure the proper fit of the nail into the medullary canal. Migration of the nail is a possibility and the only safeguards are the tightness of the fit of the nail within the bone and the accuracy with which the nail is chosen for length. Since the nail has no head or collar to prevent migration, it is necessary for it to protrude into the soft tissue and the subsequent development of bony caps or bursa formation over the head of the nail from soft tissue irritation is considered a frequent complication.

The nails, by their design, are driven into the bone in such fashion that they do not rotate axially and consequently cannot side-step bony obstructions as they are encountered, nor can they be guided laterally or peripherally to accommodate themselves to an off-step, such as in driving across a fracture line where the medullary canal is not in perfect realignment.

Bohler emphasizes very strongly that the principle is not applicable to fractures near joints. This is well demonstrated in the radius where the nail is introduced on the dorsum at the epiphyseal line through a long oblique drill hole with a considerable portion of the nail extruding upon the outer surface of the bone into the soft tissue at the completion of the operation. Bohler points out the difficulties that have been encountered in removing the nail at times, it being not a rarity for the eye provided for this purpose to tear out of the nail, and mentions that a hacksaw should be available to cut the nail off in case it should be so tightly driven into the bone that it can be neither driven nor withdrawn. It is further mentioned that a considerable time should be allowed to elapse before the nail is removed to permit it to become loose within the bone.

The hollow nails (modified Kuntscher) with the longitudinal split to allow them to be

driven tightly into the bone are prone to give rise to difficulty in removal because, as the nail conforms to the narrow portion of the medullary canal, there is a resulting irregular narrowing of the groove in the nail into which the new bone grows, forming a bone wedge into the substance of the nail to interfere with its subsequent extraction until such time as absorption of the bone occurs in the restoration of the medullary canal.

It is because of the shortcomings of the commonly used nails that the longitudinal pin has been devised.^{15,3} It has been mentioned that the fracture table is rarely needed and that there is little occasion for the need of special reduction frames. That the longitudinal pin is applicable in the fractures near joints is exemplified in the management of Colles' fractures, supra-condylar fractures of the femur, and any other fractures near joints. The need for an elaborate armamentarium of instruments has been eliminated, the technique of open reduction has been simplified so that it is rarely necessary to use more than one bone clamp, and the only additional instruments that are essential are the screw driver, a pair of pliers, and a carpenter's punch to push the head of the pin beneath the soft tissues through the stab wound.

To summarize: We believe that when properly applied, the longitudinal pin can be introduced into the bone more simply, with less trauma, that it can be driven with greater facility and accuracy, that it is more physiologic, that security without rigid fixation is more conducive to bone healing, that the pin can be extracted more easily, that its field of application is much broader and that the need for a complicated armamentarium of instruments is eliminated.

Selection of Pins

Diameters

The longitudinal pins are all of identical design and construction, varying only in length, diameter, and temper of the metal for the various sizes to afford the proper malleability and spring-like quality that is desired. Although the wide variety of shapes and diameters that is necessary with the Kuntscher nail is not needed with the longitudinal pin, it still is essential that pins be on hand of several diameters and the various lengths.

Longitudinal pins are now commercially available in four sets with racks for each so that pins can be replaced as used. It is

necessary that the surgeon have on hand this variety of pins because it is difficult to accurately anticipate one's needs in advance of the operation.

One-fourth Inch Diameter. Set 1. This pin is designed for use in fractures in the upper two-thirds of the shaft of the femur and might also be used for fractures of the shaft of the tibia.

Three-sixteenths Inch Diameter. Set 2. This diameter is useful primarily for fractures of the shaft of the humerus and of the tibia. Pins of this diameter can also be used for double pin fixation in fractures of the lower third of the femur in robust muscular individuals. In small, thin individuals, pins of small diameter (one-eighth inch) can be used to better advantage because the pins are more flexible.

One-eighth Inch Diameter. Set 3. This diameter is designed primarily for use in fractures of the radius and ulna. They can also be used to an advantage in fractures in the neck of the humerus and, as previously mentioned, in certain fractures of the lower third of the femur, for pinning of condyles of the humerus and of the tibia and for double pinning of fractures in the lower third of the tibia and in the ankle region. They may also be used for fractures of the clavicle. In rare instances, patients are encountered with fractures of the forearm in whom the medullary canals of these bones are too small to permit the passage of the one-eighth inch pin and, in such cases, we used a similar pin three thirty seconds inch in diameter.

Three-Thirty-Seconds Inch Diameter. Set 4. This is the smallest set of pins and is designed primarily for use in the small bones such as the metacarpals, the jaw, occasionally for the metatarsals, and for use in the clavicle and for certain fractures in the proximity of the joints, such as Pott's fracture of the ankle and fractures of the humeral condyles.

Although these diameters are applicable to these respective bones in most adults, wide variation in the diameters of the medullary canal of certain individuals will make it at times necessary to utilize pins of larger or smaller diameter. It should be pointed out that pins of too small diameter may result in too much flexibility at the fracture site and require external immobilization or result in delayed union. Pins of too large diameter may become impacted in the medullary canal and result in distraction with subsequent non-union. We have never had the experience, but it is even conceivable that the cortex

of the bone might be split by trying to force too large a pin down the marrow of a bone. Study the x-ray carefully before choosing the diameter of the pin. Many factors influence the security of the fixation and it is not necessary that the pin fit tightly in the bone, but it is desirable and essential that the pin not fit tightly within the medullary canal to permit the physiological muscle pull of the extremity to bring about the desired contact compression which is essential to stimulate rapid healing.

Length

Selecting a pin of the proper length is not always an easy matter. Charles Berry¹⁶ recommends selecting a pin of proper length prior to operation and strapping it to the well leg, x-raying the well leg to determine if the length is appropriate. Our practice has been to select a pin of the proper length at the time of the operation by laying the rack against the sterile extremity, the heads at the point of entrance, choosing the pin of the desired length. It should be mentioned here that, in many locations, the mechanics of the pinning is such that the pin takes on a considerable bow as it is driven axially down the bone so that in reality, a longer pin might be needed than is apparent. When the pin has been driven down the proximal fragment so that the point reaches the fracture line, it can be determined at that time, by the length of the protruding head, just how far it will extend into the distal fragment when it is driven home. If the pin appears to be of improper length, it is removed and a new pin of proper length inserted. If the pin chosen is too short, insecure fixation might result, and if the pin is too long, it might be driven into the contiguous joint or might become imbedded into the cancellous bone so firmly as to distract the fracture. It is desirable that the pin be of sufficient length to become snugly but not deeply imbedded in the cancellous bone of the extremity.

In choosing the length of a pin, only the security of fixation need be considered, as migration of the pin is prevented by the presence of the hooked head which grasps the cortex of the bone. In fractures near the distal extremity of a shaft, (distal to the point of introduction of the pin) it is necessary that the pin completely traverse the length of the medullary canal. However, in a large variety of fractures near the proximal extremity of the bone, the length of the pin is of rela-

tively little importance provided that it extends sufficiently far into the distal fragment to afford three-point pressure contact. **Before closing the wound, make checkup x-ray picture to be sure all is well.**

Condition of Skin

Not only is it necessary that the skin be in good condition in those regions in which the open reduction is performed, but also in the regions in which the pins are to be introduced even through minute stab wounds, particularly when the pin is introduced from the side of the bone. As it is driven home, firm pressure is made by the pin against the skin surface and bacteria and debris can be driven into the medullary canal when there has been improper skin preparation.

Introduction of Pin

It is wisdom always to introduce the longitudinal pin through a drill hole in the cortex of the bone. This affords much greater accuracy in guiding the pin through the cancellous bone tissue. A drill is usually selected of the same diameter as that of the pin. In certain instances, the drill may be somewhat larger, but it should not be of sufficient size to allow the entrance of the hooked head, because the pin, in such circumstances, could be lost in the medullary canal. In a few regions, the pin is introduced directly through the end of the bone, as through the olecranon end of the ulna. In most regions, however, the pin is introduced with the greatest facility, through an oblique drill hole near the extremity of the bone. It will be observed that the sled-runner point is beveled at an angle of about 50° to the long axis of the pin, and for that reason, it should be introduced into the bone at an acute angle of not more than 50° to the long axis of the bone. Otherwise, the point rather than the sled-runner surface will strike the far cortex of the bone.

With experience, extremely small stab wounds can be used for introduction of the pin and, by turning the drill bit half turns rather than by making complete revolutions, an opening can be made into the bone without entangling the overlying soft tissues in the drill bit. The drill hole is always begun at a right angle to the shaft of the bone because it is difficult to begin an oblique drill hole until after the point of the drill bit has become engaged. It is usually our practice to drill a vertical hole at a right angle to the axis of the bone, converting it into an oblique

opening by rocking the drill bit after the cortex of the bone has been penetrated.

The pin is then introduced into the drill hole and if it is observed that the pin is entering the bone too transversely, it is removed and the drill opening made still more oblique until the operator is reasonably sure that the pin will engage the far cortex at an angle of less than 50° . At times, the mistake is made unknowingly of drilling the hole in too anterior or too posterior a direction, which again makes the introduction of the pin more difficult. As the pin is tapped in lightly with the mallet, it will be seen to rotate as the sled-runner point engages the anterior or posterior cortex of the bone and, if allowed to direct itself, the sled-runner glides upon the surface of the bone in such manner as to find its own way into the medullary canal. As the pin is driven for a short distance into the bone, it will be felt to tighten as the sled-runner engages the far cortex and the shaft of the pin then begins to swing slightly medially toward the long axis of the bone, and three-point pressure is exerted. It is probably well to take a checkup x-ray at this stage, because the cortex of the bone in the extremity is thin and the pin can be driven through the inner cortex and into the soft tissues if it is introduced too transversely. We have made this mistake on many occasions, and sometimes from overconfidence, have driven the pin completely down the soft tissues of an extremity. It is conceivable that a major blood vessel or nerve might be injured by such a procedure, but it appears that the construction of the sled-runner point is such that the tendency is to push blood vessels and nerves aside rather than penetrate them.

It will be observed that as the more flexible of the pins are driven through cancellous bone of young individuals, that the curve of the sled-runner point tends to deflect the point of the pin in such fashion as to make it travel in a slight arc. As a consequence, the direction in which the pin travels can be influenced by directing the point by axially rotating the pin with a pair of pliers as it is driven. This factor is of particular importance in the fixation of certain fractures near joints, such as triple pinning of the condyles of the tibia and femur.

Driving

In designing the longitudinal pin, determining the proper diameters and degree of hardness to which the metal should be tempered, we have attempted to "eat our cake, and have

it too." For proper driving, the metal has been given sufficient temper that the shaft does not bend when tapped with sufficient force by the mallet. The sled-runner surface of the point glides on uneven surfaces like a toboggan sled, directing the point away from the obstructions. As the pin is driven, it is frequently seen to rotate because of this factor. Direction of the point can always be determined by the direction of the hooked head. The temper of the metal is such that the shaft of the pin has sufficient rigidity for fixation, exerting a spring-like quality. It has sufficient flexibility to allow it to take a considerable bend as it is driven obliquely into the medullary canal of the bone. It has sufficient resilience to realign itself within the medullary canal so that it might continue its travel down the canal of the bone without the point impinging upon the near cortex. If the metal is too soft, when the pin is driven in to take this curve, the curve will be maintained in such fashion that the point will strike the near cortex and cannot be driven. But it is further desirable that in certain regions, especially of the femur, that as the pin is driven in and takes the preliminary bow, that it realign itself partially, but not completely, so that a portion of the bow remains to resist the muscle pull of the extremity to give secure fixation by three-point pressure, the bow of the pin resisting the tendency of the bone toward the bowing, as a result of the muscle pull.

In driving the pin, remember, EASY DOES IT. It is practically never necessary to exert great force in attempting to drive the pin. When difficulty is encountered, it is because of some mechanical obstruction which will not be overcome by hard driving with the mallet. Difficulty in driving may be due to the fact that the pin was not introduced at the proper angle, that the medullary canal is occluded by callus from previous injury, or that the point of the pin has engaged in the cortex of the bone, or some bone elevation within the medullary canal. When such resistance is met, it is wisdom to grasp the hooked head of the pin with a pair of pliers and, by rotating it, extract it for about one inch, change the direction of the point by rotating the pin several degrees, and then tap again lightly with the mallet. While it is possible to drive the pin through the cortex of the bone near the extremity when the cortex is thin, this is extremely unlikely in the shaft itself.

Crossing the Fracture Hiatus: When the pin has been driven to a sufficient depth that the point emits through the fractured surface of the proximal extremity, it will usually be observed that there is practically no displacement of the marrow contents. By allowing the point to emit a short distance, reduction of the fracture can be facilitated by hooking the point of the pin within the medullary canal of the distal fragment. As previously mentioned, a fracture table or traction device is rarely needed. But a minimal incision is required, and the bone need not be dissected subperiosteally in recent cases, it being only necessary to open the hematoma. We have found it possible to reduce the majority of fractures by manipulating the fragments with one or two fingers in the wound. Traction and angulation is utilized as the point engages the distal fragment, using the operator's sense of touch as a guide as the pin is driven into the distal fragment, if the alignment of the bone is not all that is desired, a small clamp is then applied for this purpose before the pin is driven completely into the distal fragment. If the bone has not been properly realigned, it is difficult to change its position after the pin has been driven home.

It is desirable that the point be driven partially into the cancellous bone at the distal end of the shaft, especially when the fracture is located in the lower portion of the shaft. If the pin is too long, distraction will be observed to occur at the fracture side. In this event, we remove the pin and apply a shorter one.

If the fracture is comminuted, disregard the fragments during driving until after the pin has bridged the defect and is properly placed in the distal fragment. If possible, do not detach the fragments from their soft tissue attachments. Replace the comminuted fragments by circular wires or Parham bands. Do not use plates and screws, as they will prevent the contact compression factor.

If some distraction results, test carefully by pressure to see if the distraction is the result of the bones being held apart by the pin. Some distraction may be due to the relaxed state of the musculature because of the anesthetic. This will disappear as soon as the patient has reacted and the normal muscle tone has been restored. As this point, it should be determined whether or not it is planned to remove the pin at some later date. In patients well past middle age, it is our practice to

leave the pins. In younger individuals, they should probably be removed. We have seen no ill effects from the pins except from corrosion, and with the stainless steel alloy (Type 316) which is now used, corrosion is extremely unlikely, but it must be borne in mind that there is no such thing as a completely non-corrosive stainless steel; and if corrosion does occur, it can be expected with greatest likelihood in the region of the point or of the hooked head where the metal has been worked. The possibility of corrosion can be minimized by using stainless steel instruments, or at least instruments made of non-ferrous metals, for the introduction of the pins. If the pin is not to be removed, the head should be driven flush with the bone so that a very small rounded knob is palpable. If it is planned to remove the pin at a later date, it is probably well to leave the head slightly prominent to facilitate its later removal.

In closing the stab wound through which the pin was inserted, it will frequently be noticed that at one extremity there is evidence of pressure necrosis of the skin where the shaft of the pin has pressed the skin against the bone surface. This condition is allowed to exist for a great many minutes while check-up x-rays are made. It is wisdom to debride this small area to safeguard healing and to minimize the possibility of infection in this skin area.

In closing the surgical wound, it is well to see that periosteum is properly restored, and to avoid dead space by accurately closing all of the fascial planes, but avoiding the taking of sutures in the muscle tissue, as these sutures are prone to result in necrosis of the tissue with the formation of small blood pockets, which are potential areas for infection and interfere with the normal healing process.

In most instances, we feel that it is wise to apply a temporary pressure dressing which is constructed of Kerlex gauze, superimposed elastoplast upon which plaster splints are molded. This dressing is removed about the tenth day when the stitches are removed, and active function of the part is begun.

In rare instances, plaster cast should be applied at this stage. It is impossible to make a clear-cut statement as to just when external immobilization is necessary, and the surgeon must rely upon his individual judgment as to whether or not fixation of the fracture is secure. **At the completion of the pinning, before the wound is sutured, be sure to make a final x-ray checkup in both antero-**

posterior and lateral planes. The application is not always as accurate as it seems and, if any readjustment must be made, it is essential to discover the fact before the wound has been closed and the sterile instruments and trays contaminated. **Throughout the entire procedure, whenever in doubt, make an x-ray.**

Return to Function

In most cases, this procedure allows almost immediate return of the part to function. It is essential that the patient is seen frequently to insist upon early function, as many patients, despite the fact that there is no external immobilization applied, will be afraid to engage in muscular activity. Periarticular adhesions and muscle atrophy can occur from neglect as well as from the application of plaster casts. By early return to function, we mean early function of the joint to prevent periarticular adhesions and of the muscles to restore their normal tone, and to bring about contact compression of the bone ends. We do not mean necessarily early weight bearing, and this should be engaged in cautiously and not until the callus is sufficient to sustain complete weight bearing. For instance, in fractures of the femur, the patient is usually ambulatory on crutches with partial weight bearing beginning at ten days, and full weight bearing can usually be permitted at about the sixth to eighth week. In fractures near joints, such as supra-condylar fractures of the femur, if it is felt that the pins do not have secure enough purchase upon the lower fragment to prevent angulation, it might be well to apply a light brace rather than a cast so that it can be removed for exercise, but worn to prevent bone angulation.

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FOR SALE

Westinghouse Dermadex 100 Model 363-2 Superficial Therapy X-ray Unit. Ratings: 5 MA at 85 KVC; 4 MA at 100 KVC complete with transformer, and two oil immersed valves, pedestal control, main switch combined with protective automatic over load circuit breaker, and pushbutton type x-ray switch, line voltage regulator and meter, and large illuminated milliampere meter. Also incorporating electric automatic timer.

Tube stand mounted on quadrapod base complete with Westinghouse oil immersed type S single focus shockproof x-ray tube and shockproof cables and set of four filters and two cones.

Also one Victoreen r-Meter, Model 70 in a leatherette case with 25 r-Chamber in excellent condition. Has never been used since being returned from factory for check up and complete overhauling.

This equipment is a part of the estate of the late Dr. J. S. Wilson and will be sold at a bargain. Communicate with Dr. J. B. Holder, Monticello, Arkansas.

Amyloid Disease

DOUGLAS D. BAUGH, M.D.

Columbus, Miss.

(EDITORIAL)

AMYLOID DISEASE is a degenerative disease characterized by the deposition of amyloid material in the parenchyma of various organs—chiefly the liver, spleen, and kidneys. It usually follows longstanding infection, such as osteomyelitis and tuberculosis. It is uncommonly seen around large medical centers, and it is very rarely seen in private practice.

The following case history is remarkable for the usual number of the patient's pathological findings as revealed in the history and the examinations, as well as for the probable finding of amyloid disease.

W.M.M., 63, retired salesman.

F.H. Father had diabetes. Mother's people had T.B.

P.H. Osteomyelitis at intervals since age of 14 in left leg and knee. Narcotic addict for 30 years, 9 gr. daily at present. No typhoid. Pneumonia 5 times, the last time 6 weeks ago (mild). In 1935 had jaundice for about 1 year. Gallstones were found at x-ray. During this time had pain and tenderness at right costal margin; and one attack of nausea for 6 weeks. No injury except on left leg for the osteomyelitis, and for an incision for drainage of a right perinephritic abscess in 1936. Had been treated for several months for kidney trouble prior to this by Dr. Scott of Birmingham (several cystoscopies). No V.D. One year ago prostatic examination said to have been negative. Very little whiskey for past 10 years. Formerly for many years was intoxicated every few weeks, but was not a chronic alcoholic; did not drink in the interims. No known fever. Weight loss of 41 pounds in last 4 months. Poor appetite. Known hypertension for 12 years. Was 250 plus a few years ago. Has been 160 to 220 during past few months.

C.C. Lump in side—weakness—loss of weight and appetite.

H.P.I. For the past 5 months has had little energy. Beginning weight loss soon afterwards and six weeks ago found a large lump in the upper abdomen. Does not think it has changed much in size since then. No nausea or vomiting. No constipation or hemorrhoids. No gaseous distention as a rule. Nocturia 4 to 6 times nightly. Small stream—occasionally burning—

no blood—some trouble initiating flow at times. Has noted increasing dyspnea on exertion. No orthopnea. No pain in chest or otherwise. No chronic cough.

P.E. BP 189/96 P. 63. The chief abnormal finding is a large abdominal mass representing considerable enlargement of the liver of 4 to 5 fingers breadth. The liver is hard and the edge is sharp. No nodules found. It is not tender and it remains immobile during respiration. Spleen quite enlarged. There is a right inguinal hernia. The prostate is small and soft. The left leg and the left knee show multiple old incisions and thickening of the bone. One recent draining sinus. Purplish color of the skin. There are some chronic arthritic changes noted in the small joints. All veins in the arms and forearms have been obliterated by multiple intravenous injections of narcotic. No clinical jaundice or ascites.

X-RAY. An x-ray film of the abdomen shows that the second and third lumbar vertebrae are ankylosed. Prominent arthritic spurs and other arthritic changes. The kidney outlines appear normal in size and position. There is a questionable solitary stone in the gall bladder region. The presence was confirmed on a subsequent stomach film. It is the size of a marble. A GI series shows no intrinsic lesions of the stomach and duodenum. A GB series shows that no dye has entered the gall bladder. An x-ray film of the chest shows increased fibrosis generally. The heart size is top normal. Shape normal for age period. An EKG shows moderate left axis deviation, nothing significant otherwise.

LAB. Hb 101 per cent, RBC 4,900,000, WBC 6,900 Polys 77 Lymphs 22 Monos 1. Urine: 1.019 albumin four plus 15-20 WBC 7-8 RBC. Many casts. Neg. for bile. Klyne: Neg. PSP 35 per cent in one hour and 10 minutes given intramuscularly. NPN 62½. Cephalin flocculation three plus.

Referred to Dr. Campbell, urologist, who finds no significant lesion in the KUB tract, except for bilateral albuminuria and a few granular casts. Pyelograms were negative. No unilateral kidney lesion found. Suspects old low grade pyelitis.

The patient is to return in a few days for a congo red test. Another attempt will be made

to obtain blood for an icterus index. The obliterated veins are practically impossible to enter.

Diagnosis: 1) essential hypertension, 2) cholelithiasis, 3) right inguinal hernia, 4) chronic osteomyelitis, 5) chronic osteoarthritis, 6) narcotic addiction, 7) probable median bar prostatic obstruction (from history), 8) metastatic Ca of the liver, amyloid disease, and cirrhosis of the liver are being considered as a cause for the liver and spleen enlargement.

5-26-48

Congo red test positive for amyloid disease.

The diagnosis of amyloid disease is based on the following factors: 1) large, firm, smooth liver with associated splenic enlargement, 2) history of chronic infection (osteomyelitis) for almost 50 years, 3) positive congo red

test, 4) heavy albuminuria (attributed to associated amyloid kidneys and hypertensive disease).

Factors against malignancy are: 1) the liver is uniformly enlarged, and is not nodular, 2) there is associated considerable enlargement of the spleen, 3) no primary malignant focus is demonstrable.

Factors against cirrhosis of the liver are: 1) age of the patient, 2) absence of jaundice since 1935, 3) absence of ascites, 4) absence of other signs of portal obstruction such as hemorrhoids, enlarged abdominal veins, hematemesis, etc.

Treatment: 1) low fat, high protein diet with amino acid therapy (neonine and choline), 2) vitamin medication.

The Role of the General Practitioner in the Treatment of Skin Cancer

JAMES GRANT THOMPSON, M.D.

Jackson, Miss.

(GUEST EDITORIAL)

IN THE recent past a great deal of attention has been brought to bear upon the treatment and the prevention of cancer. As a general thing when cancer is thought of casually in the lay mind, it is divided into two kinds of cancer: One is internal cancer, so to speak, and the other is skin cancer. Inasmuch as skin cancers are painless as a rule and plainly visible from their very beginning, a great many people have accepted them as being of a non-malignant or non-dangerous nature. This is not true and the patient would be just as dead and die just as horribly if he died from skin cancer as if he died from adenocarcinoma of the intestinal tract.

It appears to me that to the family doctor, being as close to the patient as he is, would fall the lot to learn to look for and make tentative diagnoses, at least, of lesions on the skin that might be precancerous, or might even be malignant. At this point his role in the treatment would depend entirely upon his own personal attitude, his training, his equipment and his ability to cope with the immediate situation.

If he has the time, the inclination and training, there are many of these lesions that can

be treated by him. The only danger in this, as we see it, is his lack of caution in making certain that he has the necessary equipment for completely destroying the particular lesion which he treats, for after a lesion has been treated it may take on changes which make it much more difficult to remove at a later date than it would have been if it had been completely removed the first time it was treated.

There again we are dealing with the same idea that often prevails in the minds of the people themselves; and that is that skin cancers are not vigorously malignant, and that if they are missed the first time they can be very readily removed upon another occasion. My whole idea in treating cancers of the skin is to do as nearly as possible a one hundred per cent destruction of the lesion the first time that it is treated. Of course, we all know that nothing is perfect in medicine, and that no one can produce a large series of cases in which cancers of various sizes and of various types are treated in which there will not be a certain percentage of recurrences. This percentage of recurrence should be as low as it is humanly possible to make it, for each time a lesion is treated it becomes more difficult

to eradicate the malignancy completely and causes the destruction of more and more tissue, both in removal and in the cancer itself.

One should also try to acquaint himself with the various and sundry types of skin cancer, ranging from leucoplakia and senile keratoses in the premalignant group to the appearance of the malignant melanoma, which as my own case records show sometimes completely imitates translucent basal cell carcinoma. Clinical inspection does not always give a correct diagnosis as to whether a lesion is basal cell, squamous cell, mixed forms or malignant melanoma, but it frequently does give one a lead, and if the general man is interested in skin cancer and cares to treat it,

he can very readily over a period of time acquaint himself with these lesions by observing them carefully and at the same time do a biopsy on the lesion. He can then compare the report he receives from the laboratory with what he has seen on the patient, and can develop quite an acumen of diagnostic ability by this method.

As far as I know there is no other way to arrive correctly at this point, and even then he is going to be wrong in a considerable percentage of cases, however, if he develops a fairly acute diagnostic ability by inspection, he will have some very definite idea as to the lesions that can be treated by him, and the ones that should be referred to someone else.

APPROVED FOR LOANS

Thirteen Mississippians were conditionally approved for state medical education loans by the State Medical Education Board at its meeting here today. Today's awards bring the total number of men and women who have received medical education loans, since the inauguration of this program in 1946, to 222.

Of the students approved today for loans, 11 will enter the University of Mississippi School of Medicine at Oxford in February, 1950, one will enter second semester of his first year there at the same time, and one is attending Tulane University School of Medicine in New Orleans.

Names and home addresses of students approved today follow: Marshall B. Allen, Jr., Long Beach; Victor H. Applewhite, Route 1, Bassfield; Maxwell Glenn Carroll, Beaumont; Marvin Harvey, Tylertown; Scott McCay, RFD, Utica; Voss McRaney, Jr., Route 1, Ocean Springs; Andrew K. Martinolich, Jr., Bay St. Louis; Jasper D. Moore, Sebastopol; Gathel O. Runnels, Route 3, Mize; Boyce Murff Skinner, Tupelo; Charles M. Smith, Greenville; Charles R. Smith, Ruleville; Buford Hayes Wilkerson, Gulfport.

The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

OUR FOUR-YEAR MEDICAL SCHOOL

The hour has struck for a four-year medical school. Our legislative body is in session. The state medical association through its house of delegates has voted unanimously a number of times favoring the four-year school. In the interest of better medical service for the people it is time for the medical association to assert itself for the full four-year school. Jackson affords one of the best locations in the nation, and our two-year medical school is evidence of what we can do with a four-year institution. We have two hundred fine young men and women on the waiting list as students. We have a medical profession in the state that is on the up and up. We have a public health service second to none in the nation.

Mississippi ranks first in a system of arterial roads, second in cotton production, third in lumber, first in pulpwood, tung oil, and ship construction, pecans, and first in a system of junior colleges which have now become the

cornerstone of public education. We have around eight million dollars coming in taxes from our oil wells each year, and we have a state on which the eyes of the nation are now focused. We are on the way with a system of hospitals that will lead the nation in service to the people. We have a per capita distribution of funds that reaches out to the indigent in every nook and corner of the state showing the way to the nation in helping the unfortunate in every walk of life. We are moving forward in voluntary insurance to aid in paying hospital and medical bills.

This one thing we lack: We continue to work on the halves with our medical school. In many ways because of this we are able neither to give nor receive medical service and advancements in medicine. We must have a four-year medical school to be the heart and the soul and the driving power of medical service to all the people of our state.

Please read carefully the statement by Dr. Percy Wall of Jackson relative to membership in the American Medical Association.

We bow in homage to the memory and monumental service to his community and profession of our associate editor, Dr. D. D. Baugh of Columbus. His death on December 18 came as a great shock and loss to the entire state.

Mid-South Postgraduate Medical Assembly, February 14, 15, 16, 17, Hotel Peabody, Memphis, Tennessee.

FROM DR. BRYAN

Once again a mammoth tree in the forest of men has fallen. Doctor D. D. Baugh is dead. He was a wonderful character and he went to the very bottom of scientific medicine. Several years ago I was stricken with the same disease that terminated his career. He watched over me as he might have watched over a brother. While he attributed my withstanding the acute attack to the fact that, he said, "I was made of prewar material," I think it was largely due to his interest in me and his superior wisdom. At all events I am still among the living and gladly give him praise. I had hoped that he might complete the work in which I have been engaged for some years, the pictorial history of Mississippi medicine. I have acquired a large collection of photographs and much data of the doctors who work and have worked in Mississippi. It was a very heavy task but it represents a labor of love for Mississippi doctors. Doctor Baugh leaves his wife and three nice and beautiful little girls. He had

erected a beautiful home for them in Columbus. When he began the erection of this home he said he had delayed this undertaking too long; but he lived to complete this beautiful tribute to his little family. I hope I may live long enough to hear of some move on the part of organized medicine in Mississippi to honor his memory. May God bless and sustain his widow as she faces this awful ordeal and struggle to care for and rear their dear little girls.

G.S.B.

THE TWENTY-FIVE-DOLLAR ANNUAL DUES OF THE AMERICAN MEDICAL ASSOCIATION

At the Washington Interim Session of the American Medical Association in Washington on December 8, 1949, the By-laws were changed so that:

1. Active membership in the A.M.A. will be limited to members of constituent associations.

2. A member shall lose his membership when he is delinquent in payment of American Medical Association dues.

3. Failure to pay these dues does deprive him of membership in the American Medical Association but does not deprive him of membership in his component or constituent societies.

4. This extra assessment of twenty-five dollars is payable to the county medical society or state medical society secretary, and then transmitted to the national secretary.

5. No member should be exempted from the payment of his American Medical Association dues who is not exempted from his component and constituent society dues.

6. The American Medical Association dues have been fixed at twenty-five dollars.

Why Every Medical Man Should Comply with this By-Law Amendment:

1. It is necessary if the doctor is to remain a member of the American Medical Association.

2. His dues are needed to carry on the fight now being waged against socialization of the medical profession.

3. The fight is being won; it is now an offensive one rather than a defensive one.

4. The American Medical Association through its educational campaign has, and is awakening, the general public to the dangers implied in the national insurance scheme as proposed by the administration.

5. The authorities in Washington, sensing the effect of the campaign being carried on

by the American Medical Association have proposed a "compromise," but the trustees of the American Medical Association have rightly replied that there is no compromise in this matter, which has at its basis the principle of right versus wrong.

6. Another year of the vigorous educational campaign now being brought to the people by the American Medical Association, showing the woeful failure of such schemes in New Zealand, Australia (which have just repudiated the labor governments) and England, which will vote on this matter next spring, and the European governments, which now practice a paternalistic form of service, only because of the money loaned by our government to them, and in all of the governments where it is in force, the results have been disappointing and the governments have become bankrupt.

7. And what is more important, the medical service rendered under such schemes is lacking in efficiency and is greatly abused by people who think they are getting something for nothing. And the patient in the last analysis does pay for his "free care."

WILKINSON-AMITE MEETING

The regular quarterly meeting of the Wilkinson-Amite Counties Medical Society was held at the Field Memorial Community Hospital December 15. An excellent attendance was noted. In the absence of the presidents of the two societies, Drs. Thomas Burk of Wilkinson and David H. Thornhill of Amite, Dr. Sam Field presided, looking and feeling his usual self.

Dr. and Mrs. Sparkman of Gloster and Dr. Crocket, a recent acquisition to the county health department at Woodville, were welcomed.

After a delicious repast, which would tickle the palate of any king, served by Miss Boles, a most interesting case history of cerebrospinal meningitis was presented by Drs. Charlie Catchings and Earl Fike. Dr. Fike's discussion was a revelation in the very material changes in recent treatment and outcome of these cases. He believes that the sulfonamides are the remedy paramount in the successful treatment of this type of sickness, with the adjunct administration of penicillin. It would seem only a short time since the order of mortality of cerebrospinal meningitis has been reversed. Before the advent of the sulfa drugs and penicillin about 100 per cent of these cases died; now, almost a hundred per cent get well.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson
Otolaryngology—Charles R. Hume
Ophthalmology—Edley Jones, Vicksburg
Obstetrics and Gynecology—J. F. Lucas, Greenwood.

Orthopedics—Thomas H. Blake, Jackson.
Public Health—Felix J. Underwood, Jackson.
Pediatrics—Harvey F. Garrison, Jackson.
Radiology and Roentgenology—Karl O. Stin-gily, Meridian.

Pathology—R. M. Moore, Vicksburg, Miss
Surgery—W. H. Parsons, Vicksburg.
Urology—Temple Ainsworth, Jackson.

PEDIATRICS

AORTIC PULMONARY ANASTOMOSIS IN CON-GENITAL PULMONARY STENOSIS. REPORT OF FORTY-FIVE CASES. Willis J. Potts and Stanley Gibson, Children's Memorial Hospital, Chicago, Ill., J.A.M.A. 137:343-48, May 22, 1948.

"In the Blalock operation for relief of congenital pulmonary stenosis, one of the large branches of the aorta (usually the subclavian) is anastomosed to the pulmonary artery to increase the blood flow through the lungs. In place of this operation, the authors have anastomosed the aorta directly to the pulmonary artery. The patients ranged in age from 4 months to 13 years. The procedure was carried out on 41 patients with tetralogy of Fallot, with 4 deaths. In 6 other patients the operation could not be completed because the pulmonary artery was too small for anastomosis. Three of these died and were found to have pulmonary atresia. Absence of a murmur preoperatively suggests the presence of a small pulmonary artery. In 1 such patient, the operation was performed successfully. One patient at exploration was found to have an Eisenmenger complex which is not remediable by anastomosis. In 4 patients, the preoperative diagnosis was tricuspid atresia. The clinical picture is like that of tetralogy of Fallot excepting that the left ventricle is enlarged and the right ventricle is small. These features are demonstrable by roentgenography and electrocardiography. Three of these patients were anastomosed successfully. In the fourth, the pulmonary artery was too small. Some

patients with tricuspid atresia have a functioning patent ductus arteriosus but this can be determined at operation before the anastomosis is attempted. The operation requires use of a special clamp. Details of the operation are described and clinical diagnosis of the operable conditions discussed. Three of the 4 post-operative deaths were due to cerebral vascular accidents. The fourth child had unrecognized apical tuberculosis. No child was refused operation because of poor condition provided the preoperative diagnosis indicated a decreased blood flow through the lungs probably remediable by surgery. The longest follow-up period has been one year. All patients have a continuous humming-top murmur. Thirty-nine are free of cyanosis and greatly improved. The other 2 survivors are only partially improved. Two weeks after operation, the red blood count and hematocrit values had dropped almost to normal and the average rise in arterial oxygen saturation was 30 per cent. It is too early yet to know whether or not heart failure will develop later."

COMMENT: It has been our privilege to have referred quite a number of cases to Drs. Gibson and Potts, and it is a pleasure for us to say that their work has been entirely satisfactory and of the highest class along this line of activity in congenital heart anomalies. Their work cannot be praised too highly since it is of the highest type that can be found in any country in the world.

VA PATHOLOGY

History: A man, aged 28, was admitted to the Westborough State Hospital on July 15, 1932 and died February 8, 1933. He had used alcohol to excess for the previous 8 years, but this did not interfere with his work.

Occupation was that of shoe cleaner. He earned \$20 to \$25 a week. He had never had delirium tremens. In January 1932, he fell head first down a flight of stairs and was dazed but not unconscious. Immediately after this his personality changed. He had been a "good mixer" but he became seclusive and would sit at home instead of going out with "the gang." He stopped drinking and became irritable. There were periods when he was mute; would pay no attention when spoken to; would refuse to eat his meals and demand food as soon

as the table was cleared. He would stagger and walk bent toward one side. He would urinate and defecate on the floor and deny that he had done so. He continued to work, but earned very little. Finally he seized a knife and chased his wife, cornered her, but did not use the knife. This precipitated his commitment.

When admitted to the Westborough Hospital he was confused and his memory was defective. He could not remember how to get to the water section on the ward. He said he had difficulty in finding words to express what he wanted to say. He complained of constant headache, and said he was untidy because he had no control over his bowels and bladder. His gait was very unsteady.

Neurological Examination: Gait was unsteady; there were tremors of hands and tongue and the suggestion of a positive Babinski on the right side.

Blood: Hbg. 75; RBC 4,000,000; WBC 6,900; urine negative.

Cerebrospinal Fluid: Cells 0; albumen xx; globulin 0; Gold Sol. 0000000000; Wassermann reaction negative.

Eye Grounds: Left, slight bulging on temporal side of disc; no choking of disc. Right: normal. X-ray showed a spotty area of increased density in the left parietal area.

His condition grew worse and a few hours before his death he had a convulsion which was Jacksonian in type and involved only his right arm and leg.

State Board of Health

Felix J. Underwood, M.D.

PREVENTABLE DISEASE CONTROL

July 1-December 31, 1949

by

A. L. Gray, M.D.

Director

Acute Communicable Diseases

In the period July through October the only acute communicable disease showing a marked increase in prevalence was poliomyelitis. From January through May there were 35 cases and from June 1 through October 31 there were 285 cases. The peak month was August with a total of 78 cases. Since that time the disease declined to 75 in September and 33 in October. The total for the year to December 19 had reached 356 cases and indications are that the total cases for this year will almost equal or exceed the peak year of 1937 and 1946. Practically all of the cases were hospitalized in one of the polio units at Vicksburg, and indications are that the percentage of cases recovered without residual paralysis or with little residual paralysis will be quite satisfactory compared to previous experience.

Typhoid fever has been a little more prevalent the last few months than for a comparable period for 1947 or 1948, although it is

probable that the total for the year will not exceed the total of 60 cases for 1948.

Smallpox has been conspicuous because of its complete absence since April of this year, during which month we had the only cases this year which consisted of three.

Typhus fever has continued to show a very favorable response to control activities. Only 9 cases have been reported this year compared to 33 for the corresponding period of 1948 showing a continuation of the decline starting from its peak in 1945.

Knowledge of where the few remaining foci of malaria are is so important that the State Board of Health offers to pay private physicians \$10.00 per case for each case confirmed by finding parasites in the blood in an approved laboratory. This was made effective as of July 1 and has resulted in the expenditure of only \$20.00 for two such proven cases since July 1. Physicians over the entire state have reported that in spite of the fact that they are looking for malaria, they are finding none. It is obvious that there will hardly be enough malaria in the immediate future for teaching purposes, and we are encouraged to believe that malaria can finally be completely eradicated from Mississippi.

Liaison with Private Physicians

The professional liaison officer after completing a visit to all physicians in the state in May is now in the process of making his second visit. Upon these visits he is discussing important public health problems with private physicians among which are morbidity reporting, malaria diagnosis, syphilis control, aids available to physicians through state and local health departments, and responsibility of private physicians in the public health program. In addition he is securing suggestions from the physicians in regard to the various phases of the public health program.

Venereal Disease Control

Ample evidence is accumulating that the prevalence of syphilis is rapidly declining and that probably the prevalence of gonorrhea is declining. Certainly the frequency of serious gonorrheal complications is decreasing rapidly. These changes in the size and shape of the problem make necessary frequent alterations in the control program, and such alterations are being made as scientific discoveries and changes in the problem require. During the summer months the informational program directed at the general public was markedly increased because it is realized that once the incidence of syphilis has been reduced to a minimum, the average person must have satisfactory knowledge of the disease in order to prevent its increasing again.

In June, July, August, September and October there were 9,134 admissions to the rapid treatment centers. In the month of August the number of admissions to the rapid treatment centers in Mississippi was 3,153, which was the greatest number of admissions to rapid treatment centers of any state in the Union and for any one month in the history of the rapid treatment center program. Total admissions to rapid treatment centers since the opening of these facilities reached 99,838 through November and by the end of the year will have well passed 100,000.

In a special case finding project there were completed surveys in Sharkey-Issaquena, Bolivar, Warren and Jones counties. It is of interest to note that this survey team, in cooperation with local county health departments where surveys are made, is being responsible for referrals of one-fourth of the total number of cases admitted to the rapid treatment centers. The counties surveyed since the beginning of the survey project have now reached a total of 13.

Tuberculosis Control

The Tuberculosis Control Unit continued its services of case finding, education and consultation.

In an effort to sharpen the focus on our tuberculosis problem in Mississippi, the Tuberculosis Control Unit has been in the process of setting up a Central Tuberculosis Register for the past two years. In this period the job has been completed. The task now is to keep this register current. This register contains the name, address and current status on the 6,936 known cases of tuberculosis in the 82 counties.

From May 1 through October, one of our three x-ray bus units has done some work in 37 counties, and county-wide surveys were done in eight counties. The Tuberculosis Control Unit has continued to process, interpret and report on the films made by all the county health departments with the exception of two.

During the period, July 1-October 31, a total of 144,198 films (all sizes) were interpreted. By means of these films 734 previously unknown cases of tuberculosis were discovered and reported, and 2,477 cases of non-tuberculous chest abnormalities were discovered.

Cancer Control

The cancer control program has shown a considerable degree of stabilization as to services rendered to patients, liaison with private physicians and hospitals, and public education. It is a joint program of the State Board of Health, Mississippi Division of the American Cancer Society, State Medical Association through its Cancer Committee and Subcommittees of Finance, Terminal Care and Education, and cooperating hospitals. The number of new cases per month being referred by private physicians for diagnosis and/or treatment services has stabilized itself. During the past six months, 458 applications for service were accepted. One hundred and sixty-four applications were for cases in the terminal stages and were not accepted for service but referred to county chapters for such aid as they could give.

The Cancer Committee of the State Medical Association through its Subcommittees on Terminal Care and Finance has worked with the State Board of Health and American Cancer Society in trying to further evaluate the problem of cancer control and plan for proper expenditures of available funds so that the greatest possible results will come from funds

available. The cost of hospitalization and other care of the individual cancer patient has continued to increase, resulting in an increased rate of expenditure of funds available, but it is anticipated that funds available in the present fiscal year will take care of minimum needs at the rate of expenditure experienced since July 1.

Cases admitted for diagnosis and treatment service from June 1 through October 31 are summarized by site of the cancer process.

Female Genital Tract	118
Male Genital Tract	9
Urinary Tract	6
Skin	81
Gastrointestinal Tract	38
Eye, Brain and Spinal Cord	5
Bone	10
Lung	7
Breast	45
Mouth and Lip	20
Sinus, Pharynx, Larynx and Thyroid	29
Unclassified	7
Hodgkin's Disease and Leukemia ..	3

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The general public's awareness in regard to cancer is shown by the growing demands made on this department for films and literature. Educational kits have been placed in each of the high schools and colleges and each of the city and county libraries in the state. In addition, all leading industries in Mississippi have been contacted and educational kits placed in the libraries, waiting rooms, etc. Besides these public conveyances of information, the general public writes constantly for literature on the subject of cancer.

A fellowship award of \$1,800.00 was made to Dr. H. Thurston Whitaker of Vicksburg Clinic, Vicksburg, Mississippi, for one year's study at Memorial Hospital in New York City. It is agreed that Dr. Whitaker will return to Mississippi for a minimum period of one year.

Realizing that the private physician is the key individual in preventing death from cancer, efforts continue in professional education in regard to cancer through the Education Subcommittee of the Cancer Committee. A part of this activity has been providing all the physicians in the state with a subscription to the **Cancer Bulletin**, which carries much valuable, modern illustrated information in regard to cancer.

WOMAN'S AUXILIARY

After an absence of three summer meetings, the Gulfport Auxiliary resumed its regular luncheon meetings in November. The Auxiliary under the leadership of Mrs. Wm. Joseph, president, pledged its wholehearted support in the fight against socialized medicine, to advise and acquaint the public with the shortcomings and evil of this plan whenever possible. On this subject a telegram was sent to the Southern Governors' Conference which recently met in Biloxi thanking them for the stand they have taken against socialized medicine, and urging them to continue supporting measures that will keep America free from socialistic schemes.

Hostesses for the November luncheon were Mesdames Joe Evans and A. C. Hewes who used a beautiful fall harvest arrangement of fruits and vegetables. And the December luncheon featured the Christmas motif of Yuletide decorations in red, silver, and green with a huge centerpiece of gaily tied packages. These packages were toys wrapped for needy children and were turned over to such a cause after the luncheon. Hostesses were Mesdames E. C. Parker and D. J. Geraci.

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SEARLE

RESEARCH IN THE SERVICE OF MEDICINE

Experiences with Thrombosis and Embolism on a General Surgical and Obstetrical Service

by
CHARLES RICHARD WALTERS, M.D.,
F.A.C.S.

and
JOHN T. SANDERS, M.D., F.A.C.S.

AMONG THE 2611 cases of the Sellers and Sanders Surgical Clinic treated at Baptist Hospital in New Orleans over a three-year period ending in July, 1949, there were twenty-four cases of venous thrombosis. This number included three fatal massive pulmonary emboli, while there were six non-fatal emboli which were successfully treated by vena caval ligation, superficial femoral vein ligation, anticoagulants, or by a combination of these with sympathetic nerve block in some instances. We agree with Donaldson¹ that these measures should not be considered rival forms of treatment but should be used to supplement each other when indicated.

Only thirteen of these thromboses had their inception while the patients were under our treatment. The remainder were cases treated after consultation or were exacerbations of pre-existing thrombophlebitis. Thus, the corrected incidence was 0.6 per cent of surgical patients, and 0.2 per cent of obstetrical patients. This compares with the 0.43 per cent postoperative vascular complications reported by Wigginton,² and with the 0.42 per cent incidence among 56,000 operations at the Lahey Clinic.¹⁷ Reich, Yahr, and Eggers³ found venous thrombosis and pulmonary embolism occurring in 1 per cent of all surgical procedures, in 2 per cent of all laparotomies, and in 5 per cent of splenectomies. The incidence as quoted by Allen⁴ of 0.7 per cent fatal pulmonary embolism and 4 per cent thrombo-embolism to be expected after total abdominal hysterectomy has not been the experience of the Sellers and Sanders group,⁵ who had only one death (not from embolism) in 500 consecutive gynecological operations in which a large portion were hysterectomies.

Analysis of Etiological Factors

Age: Thrombosis and embolism occur more frequently with advancing age and its associated heart disease and debility. However, one of our three fatal pulmonary emboli occurred in a patient who was just forty years of age, while two patients having non-fatal emboli

were in their early forties. Crutcher's⁶ series of 55 fatal pulmonary emboli with one-third of the total occurring in patients less than forty years of age emphasizes the incidence of this catastrophe in the relatively young.

A consideration of the morbidity in very elderly patients undergoing surgery has been interesting in our experience. We had twenty-five in this category who were over seventy years of age, eight over eighty years, and three over ninety years. Our oldest patient undergoing major surgery was a ninety-six-year-old man who was operated upon for a strangulated hernia. Even though this advanced age group was composed of 33 per cent malignant cases and included major resections of various parts of the gastro-intestinal tract, there was only one instance of thrombo-embolic disease, and even that was not fatal. There was only one operative mortality, which seemed inevitable in a seventy-three-year-old man with a gastric ulcer perforation of more than twenty-four hours duration. There was remarkably little morbidity in the group as a whole, and a mortality rate of only 4 per cent, which confirms our stand that advanced age per se should not preclude the surgical procedure indicated.

Type of Operation: The more extensive and histolytic the operative procedure, the greater is the tendency toward thrombosis. Pulmonary emboli in our series occurred following total gastrectomy with splenectomy, intestinal anastomosis and repair of a very complicated incisional hernia within ten days of a previous repair, radical mastectomy and secondary skin graft. However, this incidence was fairly low considering the large amount of radical surgery which was performed including esophageal resection, gastrectomies, splenectomies, total colectomy for ulcerative colitis and for multiple polyposis, subtotal colon resection, abdominoperineal resection, radical Wertheim operations, and pelvic viscerectomy as advocated by Brunschwig. After relatively simple operative procedures we also experienced pulmonary emboli: one massive embolus caused

sudden death just twenty-four hours after a simple ovarian cystectomy in pregnancy, and must have been due to the breaking off of a pre-existing unrecognized venous thrombus since thrombo-embolism seldom develops before the fourth postoperative day; another case of embolism followed hysterectomy, another followed leg amputation; and we treated in consultation two cases of near fatal, multiple, pulmonary emboli which followed appendectomy in one instance and simple vein ligation for varicosities in another. Donaldson¹ called attention to a remarkable incidence of fatal pulmonary emboli in a series of gastric and colon operations, fractured hips, and leg amputations. The Tulane service at Charity Hospital performs femoral vein ligation after leg amputation as a prophylaxis against embolism.

Malignancy: That cancer is a thrombophilic disease has been recognized. In our series, there were 112 cases of malignancy treated, and thrombosis or embolism occurred in three.

Obesity: Obesity was a factor common to all our fatal emboli cases. The obese patient seems less inclined to move actively, to breathe deeply, and often has associated cardiac impairment predisposing to thrombosis by slowing of the venous circulation. Obesity as a contributing factor to thrombosis is generally accepted and constitutes another valid argument for preoperative weight reduction in preparation for elective surgery.

Heart Disease: Carlotti et al⁷ in 151 cases of pulmonary embolism in medical patients found heart disease to be present in 70.8 per cent. In our town series we operated upon patients who were fibrillating and upon others who had previously been in cardiac decompensation, but observed no significant incidence of thrombo-embolism in this group, perhaps because of special prophylactic measures which were taken.

Diagnosis

Even though the majority of pulmonary emboli are sublethal with the first infarction, 33 per cent of our cases gave no warning indication before sudden massive embolism and death. At the Massachusetts General Hospital 41 per cent of patients presented chest symptoms as the first indication of thrombo-embolic disease. Of the 59 per cent which first showed leg signs 67 per cent exhibited swelling, 61 per cent tenderness over the tibial veins, and 42 per cent a positive Homan's sign. Leg signs may be completely absent. We specifically

tested daily for fifteen days the legs of a patient and found nothing to arouse suspicion, but sudden death occurred on the fifteenth day by a proved embolus.

Dilatation of the leg veins has been further emphasized by Pratt,⁸ who has coined the term "sentinel veins" designating the pre-tibial vein fullness in cases of deep venous clotting. Sandrock and Mahoney⁹ concluded that all patients showing a hyperprothrombinemia on the second or third postoperative day should be treated prophylactically. However, McClure² could not corroborate the findings of the value of daily prothrombin determinations in predicting thrombotic complications. Bancroft² worked out a "clotting index" for indicating a tendency to thrombosis. Cummins and Lyons¹⁰ detected a predisposition to thrombosis by a reduction in the coagulation time and the presence of fibrinogen B in the plasma which normally is not present there.

Kay, Hutton, and Weiss¹¹ at Tulane have found that "alpha tocopherol and fibrinogen occur in plasma at a level which would permit alpha tocopherol to show antithrombic activity.... a thrombin-antithrombin-fibrinogen complex was confirmed as fibrinogen B.... fibrinogen B clots spontaneously when it is allowed to stand in vitro.... it represents intravascular release of small amounts of thrombin and has been implicated as an etiological factor in phlebothrombosis." The finding that it represented a combination of thrombin and antithrombin and a potential reduction in available antithrombin seemed significant. These investigators ran antithrombin tests and prothrombin times on a large number of patients postoperatively. Thrombosis did not occur in any patients with a high antithrombin level. Conversely, patients with proved thrombosis showed a drop in antithrombin level while maintaining a short prothrombin time.

The value of orally administered alpha tocopherol as a prophylactic against thrombosis is being studied clinically. It is anticipated, but not yet proved, that a dosage of 100 I.U. of alpha tocopherol t.i.d. will maintain the desired antithrombin level, when calcium gluconate is given concomitantly in the dosage of 10 cc. of 10 per cent solution intravenously every other day. In thrombophlebitis the use of the drug has already been very promising.

Treatment

Our cases of venous thrombosis occurred in spite of fairly generally accepted prophylactic measures, some of which consist of preopera-

tive reduction of obesity, improvement of an inefficient cardiac status, correction of anemia and of dehydration. Postoperatively we stress deep breathing and leg exercise with frequent change of position, wrapping the legs with elastic bandages, and early ambulation.

The older and more debilitated the patient, and, usually the more extensive the operative procedure, the more essential is early ambulation. Many of our patients over sixty years of age have accomplished early ambulation within twenty-four to forty-eight hours after the most radical type of surgery.

We do not routinely use prophylactic vein ligation or anticoagulants before any sign of thrombosis has occurred, but the individual patient we evaluate. We employ such measures when the danger of thrombosis seems particularly eminent. We have also used alpha tocopherol after splenectomy as suggested by Kay. When signs of phlebothrombosis develop in the legs, we perform bilateral vein ligation even though signs may be only unilateral.

Small emboli which ultimately end with only x-ray evidence of a small triangular infarct may appear equally as alarming during the first few minutes of the attack as the massive embolus which terminates fatally. This is due to spasm of the pulmonary vessels and bronchi which has led to the use of novocain blocking of the cervico dorsal sympathetic ganglia and to the use of papaverine as an antispasmodic while oxygen is being administered. We had no fatality in those cases of pulmonary emboli in which we had time to institute definitive therapy.

Early in this series, we performed vena caval ligation in an extremely ill patient whom we saw after his fifth pulmonary embolus. Later in the series, however, in two additional similar cases, we chose to use femoral vein ligation with aspiration of the femoro-iliac thrombus, combined postoperatively with anticoagulants. These anticoagulants were used because we feared that the vein cephalad to the ligation from which we had withdrawn a thrombus might be so damaged in its intima as to give rise to further thrombus formation. Lumbar sympathetic blocks we used further to supplement the treatment in one of these patients who was experiencing much pain and swelling of his leg at the time of his second pulmonary embolus, whereas his first embolus had occurred twelve days previously with few leg signs demonstrable. The manifestations of a thrombophlebitis can become superimposed upon an untreated phlebothrombosis, although

we prefer to recognize phlebothrombosis and thrombophlebitis as two distinct processes as emphasized by Ochsner,¹² rather than being merely different expressions of the same disease as Donaldson contends.

We do not agree with the opinion⁴ that in acute thrombophlebitis morphine by hypodermic and heat to the extremities accomplish the same relief of pain and release of vasospasm as will lumbar sympathetic nerve blocks. In one patient with exquisitely painful bilateral thrombophlebitis with tremendously edematous lower extremities who was suffering in spite of morphine, we performed bilateral blocks. She was dramatically relieved before the needles had hardly been withdrawn. Within four days the resolution of the process was practically complete, and a follow-up showed no sequelae whatever.

There are some disadvantages to ligation. Starr¹³ has reported one-third of his patients having annoying discomfort of the legs after ligation. Our patients, too, have experienced this annoyance in about the same proportion, but the symptoms have rarely existed longer than a few weeks. We have also experienced bleeding in three cases among a fairly large number in which anticoagulants were used either prophylactically or therapeutically, but no serious hemorrhage occurred. Allen reported minor hemorrhage in 3.4 per cent and serious hemorrhage in 1.8 per cent with two deaths occurring in forty cases of marked hemorrhage out of 1,983 cases taking anticoagulants.

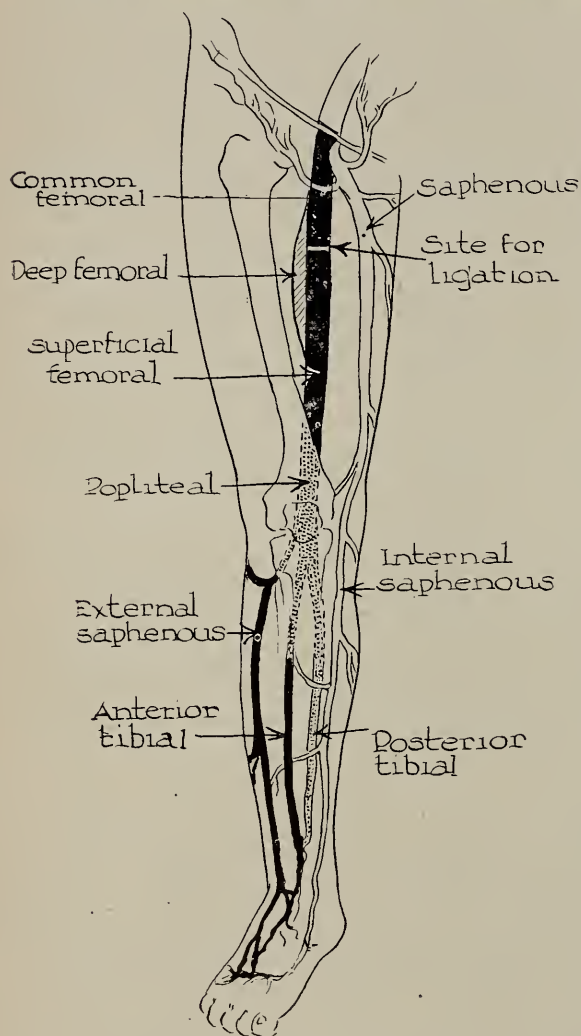
There is a great variation in the reaction of a patient to dicumarol. In a small debilitated patient undergoing total gastrectomy and splenectomy for carcinoma of the stomach, hematuria occurred with a drop in prothrombin time from 90 per cent to 17 per cent after only a single dose of 100 mgms. of dicumarol.

Thus, we hesitate to use more than 200 mgms. of the drug as an initial dose even when we are not dealing with carcinoma and do not suspect any liver changes. Daily prothrombin times are obtained and the dosage administered depending upon the prothrombin percentage—200 mgms. daily being given until the level is below 40 per cent, when 100 mgms. daily is used, as needed, to keep the percentage below 30. Dicumarol can be used postpartally with satisfactory depression of the mother's prothrombin time without adversely affecting the nursing baby. However, vitamin K is recommended for the baby. In seriously ill patients with pulmonary infarc-

tion, we have used heparin immediately following vein ligation to depress the clotting time until the prothrombin time could be reduced satisfactorily with dicumarol. We have used heparin in intravenous drip, Pitkins' menstruum, and in 50 mgm. dosages intramuscularly every four hours, and believe the latter procedure to be the most expedient and preferable when heparin is indicated.

The treatment for undesirable bleeding resulting from dicumarol is 60 mgm. of vitamin K intravenously and fresh blood transfusion. The vitamin K may be repeated after a few hours. For troublesome bleeding following heparin administration, Cowley and Lam¹⁴ have used protamine sulphate to restore the clotting mechanism in dosages of 1 mgm./kilogram body weight.

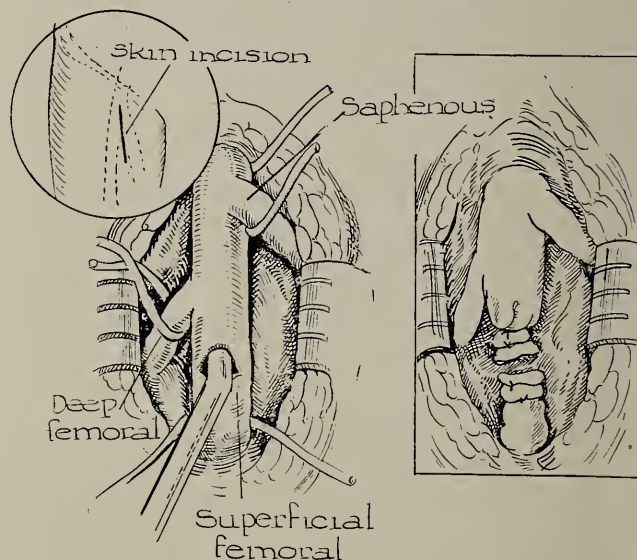
Technique of Superficial Femoral Vein Ligation



The operation is performed with the patient in an inclined position with the head of the table elevated about 20 degrees to increase by gravity the retrograde venous pressure in the femoral veins. The anesthesia is usually local

procaine infiltration but may be supplemented by other agents. The incision is made over the femoral vessels as shown in the diagram. The saphenous vein is identified. The fascia over Scarpa's triangle is divided to expose the femoral vessels. The artery may be smaller than anticipated, due to spasm. The vein lies somewhat posteriorly and medially to the artery. The saphenous vein enters anteriorly and somewhat medially into the common femoral at a level about 3 cm. below the inguinal ligament, while the profunda branch enters at a slightly lower level from a postero lateral position. The superficial femoral vein is the continuation upwards of the deep veins of the leg which form the popliteal and pass through Hunter's canal and up into Scarpa's triangle as the superficial femoral vein, before being joined by the profunda femoris vein to make up the common femoral vein. Ligatures are passed about the superficial, profunda, and saphenous veins but are not tied.

An opening is made transversely in the superficial femoral vein at the site shown in the diagram just below the profunda branch.



A thrombus may be found which extends up into the iliacs. This is aspirated from the upper segment until a free retrograde flow is obtained, which is proved by tension on the ligatures about the profunda and saphenous branches to be retrograde down the iliac and common femoral veins rather than from the tributaries. It is important to investigate the profunda branch for a thrombus, and to ligate it also if a clot is contained. The lower segment of the superficial femoral vein is aspirated of clot, the vein is transected just below the profunda branch, and each end is ligated, reinforced by transfixing suture.

CONCLUSIONS

1. The incidence of postoperative venous thrombosis with and without pulmonary emboli was 0.6 per cent among patients of the Sellers and Sanders Surgical Clinic.
2. Of the pulmonary emboli cases 33 per cent were fatal with a single massive embolus. No patient was lost from thromboembolism when there was the opportunity to institute definitive therapy.
3. Obesity was an etiological factor common to all of these fatal cases, and seemed predominant over the factors of old age, malignancy, and heart disease.
4. Phlebothrombosis too often escapes diagnosis, with fatal consequences, in spite of a most alert attitude toward its clinical detection.
5. Investigations by Kay et al at Tulane indicate the value of the antithrombin level in diagnosing thrombosis, and show much promise that the antithrombic property of alpha tocopherol administered with calcium gluconate postoperatively will be a valuable prophylaxis against embolism.

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The Early Diagnosis and Treatment of Pelvic Malignancy*

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FOR CLARITY of presentation this rather formidable subject is divided into separate discussions of carcinoma of the cervix, carcinoma of the endometrium, and carcinoma of the ovary.

Carcinoma of the Cervix

1. **Prevention.** Most of the incipient carcinomas of the cervix have been found in the mucocutaneous junction between an erosion and normal cervical epithelium. In other words, they most frequently occur in a cervix which has been damaged by childbirth or by infection. Prevention, in so far as possible, of the original trauma and the early correction of even minimal lesions offer most in prevention of this highly malignant condition. Postpartum cauterization or coagulation of even the smallest erosions is the obligation of every practitioner who attends a woman in childbirth.

Periodic examination of all women at intervals not longer than one year is essential in the campaign to prevent and to detect cervical malignancy in its incipency. The lesions so discovered must receive proper treatment without delay. Postponement of therapy until after the patient has passed beyond the menopause deprives her of prophylaxis during the age of highest incidence of carcinoma of the cervix.

2. **Early Detection.** Until the cause of malignancy is known, little beyond the above can be accomplished in the way of prevention. Our fort, therefore, is the earliest possible detection of the most minute lesions. Recent contributions by TeLinde and Galvin and by Younge indicate that pre-invasive carcinoma may exist for years before the development of clinical evidence of its presence. There can be little doubt, therefore, that visible carcinoma is, in reality, late carcinoma. Our efforts must be directed to means of early discovery.

Foremost among these is a much broader education of women concerning the significance of intermenstrual bleeding and the necessity of frequent examinations even in the absence

of symptoms. As physicians, it is our obligation to make ourselves available for educational talks to women in large groups such as schools, colleges, industrial plants, church societies, and clubs.

Of no less importance is the necessity of awakening physicians to the duty of performing an intelligent, competent examination when the patient does present herself. In a survey now being conducted in Philadelphia, it has been established that the doctor is directly responsible for delay in the institution of treatment in approximately one-fourth of the cases of pelvic malignancy. The most frequent error attributable to the attending physician is his failure to make a pelvic examination in the presence of irregular bleeding. Too often the records show the use of various hormonal preparations over a long period of time before any measures were taken to establish the cause of the abnormal bleeding.

3. **Papanicolaou Technique.** Unfortunately the lay press has given widespread publicity to Papanicolaou's method of cytologic diagnosis of cancer long before it can become clinically available to more than a small percentage of women. The public has been given the impression that study of a single smear taken from the vaginal vault will determine conclusively the presence or absence of cancer in the entire genital tract. Scheffey and Rakoff reported a series of cases in which only single slides were studied; negative smears were obtained in 30 per cent of known active cancers of the cervix. Fremont-Smith, Graham, and Meigs reported a 10 per cent incidence of negative smears in known cervical carcinomas, and 20 per cent negative in the presence of endometrial cancer. If this high percentage of active carcinomas can be missed by experienced pathologists, it is obvious that the technique is not ready for immediate general clinical application. It is hoped that technicians and pathologists will go in large numbers to the few laboratories in the country offering training in this promising method. In the meantime, to quote Joe V. Meigs, "reliance on a diagnosis, for or against cancer, submitted by an inexperienced 'cytologist' constitutes malpractice

* Presented before the Gulf Coast Clinical Society October 1949.

as surely as does the performance of a major operation by an inadequately equipped surgeon." Until highly specialized personnel become widely distributed the average practitioner might well be deluded into a false sense of security on receiving a negative report. And, corollary to this, patients might be subjected to needless radical surgery on the basis of false positive reports.

On the other hand, as so aptly stated by Gates and Warren, "overemphasis on the statistical accuracy seems to put the stress in the wrong place. The thing that matters is whether the use of the method will discover cancer and initiate treatment earlier than would otherwise be done." The fact that use of the Papanicolaou method as a screening test has already resulted in the detection of a large number of extremely early pre-clinical lesions, justifies the examination of thousands of negative slides.

On my service in the Graduate Hospital of the University of Pennsylvania we have used the Papanicolaou technique for the past three years. Smears are made from the posterior vaginal vault and from the cervix on all patients admitted to the wards. The details of the technique of staining will be omitted. Eleven hundred and nine patients have been studied: 97.2 per cent were negative; follow-up studies have failed to reveal carcinoma in any of this group. Two and eight-tenths per cent were positive. In all but three of these the presence of cancer has been proved by subsequent biopsy, curettage, or microscopic study of the removed structures. In two, the smears became negative after radiation in benign dosage for functional uterine bleeding; the curettings and cervical biopsies were negative. In the third case cancer could not be detected in the removed uterus and appendages. In four cases total hysterectomy and bilateral salpingoophorectomy were performed only on the basis of repeatedly positive smears, even though previous curettage and cervical biopsy had been negative; in three of them a small pre-clinical carcinoma was found. The detection of such early cases is so encouraging that this work is being expanded to include all female admissions to the entire hospital.

4. Biopsy. There is little doubt that biopsy of every cervix would result in the diagnosis of many pre-clinical carcinomas; theoretically, this would be the ideal to achieve. On the other hand, the lack of hospital facilities and

the enormous amount of involved work make this a practical impossibility. It would seem reasonably safe to pursue a course of individualization of cases, performing biopsy on all lesions which are firm to touch, bleed on manipulation, are excavated, elevated, or which do not heal promptly after simple cauterization or coagulation.

I am convinced that hospitalization is required for the proper performance of an adequate biopsy. The biopsy should be a thin, saucer-shaped piece of tissue which must include the mucocutaneous junction of the entire external os. Ayer of Montreal has recently devised a scalpel, the blade of which is set at an angle of 75 degrees, with which this type of biopsy is made quite simple; the attendant bleeding and discomfort render it inapplicable as an office procedure. "Punch" and "pie-shaped" biopsies undoubtedly have their place in the removal of a small amount of tissue from a particular visible lesion, but these techniques may lead to false security unless the biopsy happens to include the cancer-bearing area. It must be borne in mind that roughly 10 per cent of the reported pre-invasive carcinomas have occurred in cervixes which appeared clinically to be normal.

5. Treatment of Cervical Carcinoma. After the advent of radium the great majority of surgeons abandoned operative treatment because of its high immediate mortality. Thirty per cent of Wertheim's first one hundred patients failed to survive the operation; the rate was reduced to 15 per cent in his later cases. It is estimated that the average mortality rate of the radical operation during its heyday was approximately 20 per cent; and even this staggering figure does not take into consideration the large number of women who were doomed to invalidism by postoperative urinary and rectal fistulae.

The negligible primary mortality of radiation therapy, the absence of postoperative morbidity, the almost miraculous immediate response, and the high incidence of apparent cures has resulted in its adoption as the treatment of choice in most of the major gynecologic clinics throughout the world.

The technique of radiation therapy has undergone a gradual evolution during the past thirty-five years. With increase in knowledge of the physics of radiation and the biologic reaction of tissues to this form of therapy, it is rare indeed to see the needless destruction of tissue which was formerly referred to

as "the usual radium slough." In most clinics at the present time treatment with high voltage x-ray precedes the local application of radium. This has the four-fold advantage of devitalizing the cancer cells before local manipulation may cause their dissemination, at least partial sealing of lymphatic channels, clearing up the ever present local infection, and an amazing restoration of the cancer-distorted anatomic relationships.

At Pennsylvania Hospital we have given 2000 to 2800 roentgens, as measured in air, to one 15 by 15 centimeter port, anteriorly and posteriorly. For greater protection of the bladder and lower bowel, a strip of lead four centimeters wide and five millimeters thick is placed on the skin in the midline prior to each treatment. The remaining areas are filtered by one millimeter of aluminum and 0.5 millimeter of copper. Two hundred kilovolts are utilized at a distance of 50 centimeters. The effective wave length is 0.160 gold, and the half value layer is 0.90 millimeter of copper. If well tolerated, 200 roentgens are administered anteriorly and posteriorly three times each week. In our earlier cases two lateral ports were used, but this was discontinued because of the high incidence of fracture of the neck of the femur following this relatively ineffectual amount of exposure. The addition of the lead strip, which reduces the depth dose to the midline structures by 50 per cent, has diminished the number of both early and late bladder and bowel reactions.

More recently the abdominal and loin ports have been supplemented by a cervical port, the radiation being delivered through an intravaginal cone. Behney, and more recently, Taylor and Twombly, have reported promising improvements in salvage use of this method.

Six weeks after completion of the x-ray cycle the local application of radium is made. Techniques vary widely in minor details, but the consensus is to give approximately 6000 milligram hours to the cervical area, including the cavity of the uterus and the bases of the broad ligaments. This dosage will vary upward if small amounts of heavily filtered sources of radiation are used, or downward, if larger quantities of radium are utilized. Our technique at the Pennsylvania Hospital for the past ten years had been to place three 10 milligram capsules in tandem into the cervical canal, filtered by 1 millimeter of platinum. One 10 milligram capsule filtered by 2 millimeters of platinum is placed in the vagina antero-

posteriorly across the cervix, and a 10 milligram capsule similarly filtered is placed in each end of a colpostat. This technique utilizes a total of 60 milligrams of radium, which is left in place for a period of 100 hours. Not infrequently this dosage is divided into two applications, administered at an interval of two weeks. Because of the potent dangers of infection and of injury to the ureters and the uterine vessels, we have abandoned the use of interstitial radium needles. The lower bowel is cleansed by an enema prior to the application, and a catheter remains in the bladder. A moderate Trendelenberg position is maintained throughout the period of radiation to protect the intestinal tract.

6. Results of Radiation Therapy. The average absolute five-year survival rate following combined radiation therapy, as estimated from present day reports, is in the neighborhood of 28 per cent. A fair average of five-year salvage figures for growths apparently limited to the cervix is 75 per cent; for those questionably limited is 50 per cent; for those who have invaded the broad ligaments is 20 per cent; and in the group of cases in which the growth has involved the entire pelvis, the five-year salvage is practically nil.

Our results at the Pennsylvania Hospital are quite comparable with those reported in the current literature. Ninety per cent of the early cases (Schmitz Stage I) have survived five or more years; 49 per cent of those questionably limited to the cervix have survived; 21 per cent of those in whom the growth extended into the broad ligaments have been salvaged; none of the extensive cases have lived for five years. The overall five-year salvage in the entire treated group is 36 per cent.

Within the past few years Meigs of Boston, Taylor of New York, Counsellor of the Mayo Clinic, Morton of San Francisco, Carter of Durham, and a few others have advocated a return to the radical Wertheim operation combined with Taussig's lymphadenectomy for treatment of certain selected early cases. Meigs recently has detailed his reasons for this decision as follows:

- "1. If the cervix is removed, there is no chance for recurrence in it.
- "2. If the cervix is removed no cancer can grow in it as a recurrence.
- "3. Certain cancers of the cervix are radiation-resistant.

"4. From the work of Bonney and Taussig it has been proved that about 20 per cent of patients with lymph gland involvement can be salvaged by surgery."

Those who advocate this method restrict its use to good operative risks in whom the growth involves not more than the entire cervix and the upper portion of the vagina. It is not applicable to those in whom the parametrium is invaded.

It is a credit not only to Meigs' consummate skill but also to the numerous advances in modern surgery that he was able to perform this exacting procedure ninety-one times without an operative death, and that he has had forty consecutive cases without development of a single urinary fistula. Of the thirty-six patients who had been operated upon more than three years previously, he has reported that 77.7 per cent were living and well.

Sufficient time has not elapsed for a true evaluation of this procedure. While these results are indeed excellent they are not significantly better than those following radiation therapy in cases of similar extent. It is hoped that a few qualified clinicians will continue the surgical approach until time will permit a comparison of results. In the meantime it is suggested that the rank and file of those who treat cervical cancer not abandon radiation therapy. There is little doubt that the general adoption of the radical operation would result in needless mortality and morbidity.

The treatment of carcinoma in situ, if one can be quite sure of the pre-invasive nature of the lesion, is total hysterectomy and bilateral salpingo-oophorectomy. There seems to be no justification for the radical operation in this group of cases.

Carcinoma of the Endometrium

1. **Prevention.** Until the primary cause of cancer of the endometrium is known, relatively little can be accomplished in its prevention. Several etiologic considerations, however, must be mentioned. Prolonged ovarian function, as evidenced by menstruation beyond the age of fifty, has recently been cited by Crossen as favoring the development of malignancy. The relationship of hyperplasia of the endometrium to carcinoma has long been recognized. Corscaden has shown that the incidence of carcinoma of the endometrium is three times as great in women who previously have had radiation therapy for benign uterine hemorrhage as in the population at large. The

presence of uterine myomas in one-fourth of the cases of carcinoma of the endometrium strongly suggests a causal inter-relationship. Evaluation of these factors is indeed a difficult matter, but one cannot escape the belief that surgical removal of the symptom-producing myomatous uterus and the uterus in which the endometrium is hyperplastic is of prophylactic value.

2. **Early Detection.** Since the first symptom of carcinoma of the endometrium is either a foul leukorrhea or irregular bleeding, women must be taught the potential significance of these symptoms and must be impressed with the urgent necessity of reporting for examination immediately on their appearance. The physician is impelled to determine the cause of bleeding before instituting any form of therapy. Study by the Papanicolaou technique is of value only if malignant cells are found, as evidenced by Meigs' 20 per cent, and by Scheffey and Rakoff's 33 per cent negative slides in the presence of cancer of the endometrium. Unless the cause of bleeding is obvious, nothing short of a diagnostic curettage suffices to establish the diagnosis. Even in the presence of a cervical polyp or of atrophic vaginitis the patient deserves investigation of the endometrium. A year of valuable time was wasted in a recent patient in my practice because her medical attendant had erroneously attributed her post-menopausal bleeding to an obvious atrophic vaginitis. Hormonal therapy had been used without knowing that cancer of the endometrium was present.

3. **Treatment of Cancer of the Endometrium.** Study of any large series of cases of this condition establishes without doubt that the greatest salvage follows the use of radiation therapy, by either x-ray or radium, followed by surgical removal of the uterus and adnexa. Miller reports a five-year survival rate of 77 per cent using roentgen therapy followed by complete surgical extirpation. Scheffey has obtained a salvage of 91 per cent by the use of intra-uterine application of radium combined with hysterectomy. Our own technique is the intra-uterine application of 100 milligrams of widely distributed radium, filtered by 1 millimeter of platinum for a period of forty hours. Total hysterectomy and bilateral salpingo-oophorectomy are performed after an interval of four weeks. Our own statistical data are being compiled at the present time; the five-year salvage is approximately 80 per cent in cases in which combined radiation and surgical therapy was utilized.

Unfortunately, since cancer of the endometrium is typically a disease of advanced years, many patients are poor operative risks. In this group a five-year salvage of approximately 50 per cent follows the use of radiation therapy alone. In these cases a second similar dosage of intra-uterine radium is used.

Additional x-ray therapy is rarely employed because of its poor toleration in these handicapped patients.

Carcinoma of the Ovary

1. **Prevention.** Because of the typical symptomless insidious nature of primary carcinoma of the ovary nothing can be offered as a preventive measure. Fully 50 per cent of such growths have extended beyond the confines of the ovary at the time of original operation. Prevention of carcinoma as a secondary development in a previously existing cystadenoma is provided by early removal. Because carcinoma of the ovary almost always becomes bilateral eventually, removal of the apparently uninvolved opposite ovary constitutes an imperative prophylactic measure. The bilaterality of the disease is so well established that one should perform a second operation for removal of the retained ovary on receiving a report of malignancy in an unsuspected cyst.

2. **Early Detection.** Routine periodic examination of all women is the only possible method of early diagnosis of carcinoma of the ovary. An enlarging pelvic tumor in a woman beyond menopausal years is more likely to be ovarian than uterine in origin, and, because of the high incidence of malignancy, immediate operation is indicated. This becomes even more urgent in the presence of bilateral tumors, nodularity of the cul-de-sac, or associated ascites.

3. **Treatment of Ovarian Carcinoma.** Bilateral salpingo-oophorectomy and total abdominal hysterectomy followed by full roentgen therapy

of the entire abdomen constitutes the treatment of choice. Because of early local and distant metastases it is possible to remove all the visible growth in not more than half of the cases; in all, however, as extensive an operation as possible should be performed.

Not infrequently the extent of the disease is so great that nothing more than biopsy can be performed. Roentgen therapy of such patients occasionally is followed by regression of the growth, so that subsequent radical operation becomes possible.

True evaluation of postoperative x-ray therapy is difficult, for, even without its use, secondary implants tend to disappear spontaneously after the parent tumor is removed. On the other hand, the remarkable response of some of the extensive cases attests its undoubted value.

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AMERICAN GOITER ASSOCIATION

The annual meeting of the American Goiter Association will be held in the Shamrock Hotel, Houston, Texas, March 9, 10, 11, 1950. The program for the three-day meeting will consist of papers by nationally known men, dealing with goiter and other diseases of the thyroid gland, dry clinics and demonstrations.

The Surgical Treatment of Hypertension*

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INTRODUCTION

DURING THE past decade many important advances have been made in the field of vascular surgery. Numerous important contributions have been introduced in the field regarding a better understanding of successful methods for the diagnosis and treatment of peripheral vascular disease. Due to the experience gained from the treatment of severe injuries resulting from the late war, much progress has been made in the management of traumatic arterial aneurysm, arterio-venous fistulae, and some of the more obscure post-traumatic syndromes which occur in the extremities. The brilliant experimental and clinical contributions made by Blalock¹ have resulted in spectacular advances in the treatment of patients with congenital heart disease and congenital lesions of the great vessels.

Surgeons have been interested in the surgical treatment of severe hypertension for many years. Since 1943 methods have come into use which enable a higher percentage of patients with severe hypertension who are treated surgically to anticipate a better result than formerly. The surgical treatment of hypertension may still be considered as one of the frontiers of surgery since there has certainly been no final word on the management of patients with this serious condition. The purpose of this paper is to review the general problem of essential hypertension, to point out the advantages and the limitations of surgery, and to cite the results that have been obtained in patients with severe hypertension who have been given the advantages of surgical therapy.

Incidence of Hypertension

A chart published by the Metropolitan Life Insurance Company calls attention to the fact that cardiovascular renal disease, of which hypertension is one of the most severe symptoms, is the leading cause of death in individuals forty-five years of age and over in this country. The table reveals that the death

rate from cardiovascular renal disease is 1569 per one hundred thousand of population while cancer, the second leading cause of death in this country, showed only 386 per hundred thousand of population. Influenza and pneumonia are listed as third with 206, accidents as fourth with 153, and diabetes and tuberculosis as fifth with 83. It may be seen from the relative frequency with which the various diseases cause death why the subject of essential hypertension is of paramount importance to everyone. It is also significant that life insurance companies which are vitally interested in all factors which prolong life have donated large sums of money for research on hypertension and cardiovascular renal disease.

Diagnosis of Essential Hypertension

By definition the term essential hypertension is a state of elevated blood pressure for which there is no known cause; consequently, the diagnosis of essential hypertension is one which must be made by exclusion. Some of the specific entities which must be excluded in order to establish such a diagnosis are adrenal tumor, cerebral trauma, brain tumor, unilateral kidney disease, and coarctation of the aorta. Patients suffering from certain adrenal tumors are known at times to have severe hypertension. The blood pressure curve associated with a tumor of the adrenal gland is much more likely to be somewhat erratic in type and to be associated with marked periods of elevation. It is also well known that patients with severe cerebral trauma may show an elevated blood pressure, however, there is little difficulty in these cases in ruling out cerebral trauma since the history and physical examination make the cause of hypertension fairly obvious. A brain tumor producing an increase in intracranial pressure may be associated with hypertension. The associated findings resulting from the expanding lesion in the brain ordinarily enable one to suspect the presence of a brain tumor.

A number of years ago Goldblatt² in a group of ingenious experiments performed on animals demonstrated that ischemia of one kidney could produce a severe sustained hypertension. In the experimental laboratory Gold-

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blatt applied a small silver screw to the renal artery of the dog. This clamp was gradually tightened so that the kidney received a progressively smaller supply of blood. Dogs treated in this manner gradually developed a very definite hypertension. It was also possible by exciting the ischemic kidney to restore the animal blood pressure to normal. As a result of the Goldblatt experiments it has been recognized clinically that certain relatively rare cases of hypertension might be caused by unilateral kidney disease where a lesion existed which had produced a longstanding ischemia in the organ. It has been demonstrated that occasionally patients have been restored to normal as a result of nephrectomy, yet relatively few patients are seen who may be relieved of their hypertension by nephrectomy.

Coarctation of the aorta is another lesion which produces a marked elevation of the blood pressure in the upper portions of the body. In patients with a constricting lesion of the thoracic aorta a pronounced increase in the arterial pressure is found in the arms and in the brain. On the contrary the blood pressure in the lower extremities is markedly decreased. The femoral pulse is often entirely absent. The simple matter of palpating the femoral pulse below the inguinal ligament will usually settle the question as to whether or not the patient is suffering from a coarctation of the aorta. There are other conditions which may cause hypertension, however, the above discussion illustrates the importance of exclusion in establishing the diagnosis of essential hypertension.

Medical Management of Hypertension

In the past the majority of patients with essential hypertension have been treated by the internist and the general medical man. This is both fitting and proper and it is quite likely that the majority of patients with this disease will always be cared for by the internist and the general practitioner. It is only the exceptional patients in whom surgery is indicated for treatment. Because of this fact it is wise to review some of the methods used in the medical management of hypertension.

Rest is perhaps the most important part of the medical régime. Internists frequently advise patients with mild hypertension to recline an hour after the noon meal and to break the day with additional rest about the time of the

evening meal. It is not unusual for an individual who is suffering from severe hypertension and associated complications to be given complete bed rest for a period varying from a few weeks to several months. Sedation is generally used and is beneficial. Phenobarbital in doses of $\frac{1}{2}$ grain given three or four times a day is as satisfactory as any other sedative. The adjustment of these individuals to a different mode of life is exceedingly important. Such an adjustment implies both mental and physical adjustment. It is well known that individuals who are subjected to tension as a result of worry find that hypertension is often aggravated by family difficulties, financial worries, and various psychological problems. This is similar to the difficulty that patients with a duodenal ulcer experience during abnormal periods of stress and strain. Unfortunately, it is not always easy and it is not always possible to adjust the patient's mode of life and outlook on life even when the physician is able to recognize the specific difficulty.

Dietary restrictions have long been considered an important part of the patient with severe hypertension. It is generally recognized that obesity casts an extra burden on the heart and circulation of any individual. The life expectancy in the hypertensive patient as in other individuals more than forty years old is probably better if they are a little underweight rather than being overweight. In former years it was common to give the hypertensive patient very severe dietary restrictions. At the present time there is one school of thought that advocates a low sodium diet, a diet consisting almost exclusively of rice. It is true that some of the individuals who are placed upon such a régime show a substantial reduction in the blood pressure. A diet of this type is extremely unpalatable and it is exceedingly difficult to keep a patient on such a diet over a long period of time. Immediately after World War II it was noted that the incidence of hypertension had definitely decreased in some of the overrun dairy countries where the native population had been unable to secure their usual amount of eggs, meat, and butter. Because of this it was thought that a severe restriction of animal lipoids from the diet would result in a significant decrease in the incidence of hypertension and hypertensive heart disease. Evidence later accumulated showed that such individuals were suffering from weakened muscles throughout the body. Apparently as

a result of the inadequate diet the heart was affected similarly to other muscles. Consequently, after such individuals resumed a normal diet for a period of months their general strength returned and the hypertension recurred.

Drugs Which Have Been Used in the Management of Hypertension

The drugs other than sedatives which have been used in the treatment of hypertension have consisted chiefly of two different types. Vasodilators will, of course, reduce the blood pressure but their effect is quite transient and of little real value. During the past decade the thiocyanates were popularized and a few years ago toxic depressant drugs were prominently mentioned in the literature. At the present time it is usually agreed that such drugs are not only dangerous but have relatively little permanent effect on the hypertensive state. The methods mentioned above have helped many patients who are suffering from hypertension but it is probably fair to state that they have never resulted in the cure of any patient with hypertension.

Method of Study of Cases

Since the diagnosis of hypertension is one which is made by exclusion and since only a relatively small number of the patients with hypertension should be candidates for surgery, it is exceedingly important that they be carefully studied. A careful history and physical examination are essential. Indeed, the careful selection of patients who are to undergo surgery is a responsibility which should be borne only by individuals who are definitely familiar and interested in disease. From an examination of the eye grounds much valuable information may be obtained. In this location one may actually see the arteries under direct vision. If there is an increased spasticity, actual sclerosis, hemorrhages, or exudate present as a result of the hypertensive state it may be recognized. The ophthalmologist is familiar with the changes which result from hypertension in the eye grounds and a consultation is frequently beneficial. Anyone who does a careful physical examination can and should examine the eye grounds when the occasion presents itself. The heart should be studied with the electrocardiogram and x-ray in order to gain evidence of cardiac damage or of an abnormality inside due to prolonged overwork. It is important for the kidney function

to be determined. Obviously, if the hypertension has been severe enough and has existed long enough for the patient to have irreparable kidney damage, operation is contraindicated. In general it is our opinion that a patient who has a sustained non-protein nitrogen of 45-50 should not be subjected to operation. The sedation test is a useful procedure and is carried out in the majority of patients undergoing study. A patient is admitted to the hospital for a number of basal blood pressure readings. Repeated doses of nembutal are given until it is possible to secure three or four blood pressure readings without awakening the individual. A definite fall in the blood pressure during the time that the patient is sleeping is generally considered a good prognostic sign. Such an individual is more likely to receive a good result from operative treatment than an individual in whom the blood pressure does not show any variation after sedation. Unfortunately, there is no specific test which will enable us to prognosticate absolutely with reference to a given patient. It is true that we are familiar with the results regarding the percentage of patients who will be improved by surgery, however, we have no specific test which is helpful in the selection of patients who may anticipate a good result from surgery. At the University of Tennessee we are seeking to develop a better preoperative test by using the polygraph. The polygraph enables one to make observations regarding certain subjective body changes such as pulse rate, respiration, blood pressure, and skin resistance. All of these factors are affected to a certain extent by the autonomic nervous system. It has been felt that a study of the patterns of response to various types of stimuli in hypertensive patients both before and after surgery might be helpful in developing a better preoperative surgical test for such patients.

Indications and Contraindications for Surgery

Since the surgical treatment of hypertension may truthfully be said to represent one of the frontiers of surgical attack, established lines regarding indications and contraindications for surgery cannot be laid down at the present time. However, we feel enough work has been done in this field to definitely establish certain general principles. In general it is thought that in a consideration of blood pressure changes, a high diastolic pressure is more significant and carries a more severe prognosis than a

relatively high systolic pressure. We have arbitrarily chosen a diastolic pressure of 110 as an indication for surgery. The patients who do not show irreparable damages to the brain, kidney, or heart and who in spite of medical treatment have a diastolic reading of 110 or above should be offered the benefit of surgical treatment. It is usually stated that patients beyond the age of fifty-five should not be operated on for hypertension since their vessels are more apt to be fixed and relatively inelastic. It should be recognized that the chronological age and the physiological age do not necessarily coincide. For this reason a certain amount of latitude is justified in recommending surgery for patients in the upper age brackets. The fact that a patient has had one cerebral accident from which he has recovered or one attack of coronary thrombosis from which recovery has occurred does not contraindicate surgery. It may be a definite indication for surgery as the pressure has been relieved and the occurrence of another stroke or another attack of coronary disease may be prevented in such an individual.

Patients who have severe renal damage which is irreparable and demonstrated by the presence of a non-protein nitrogen of the blood of fifty or above should not be operated upon. It is also true that patients who have severe cerebral difficulties such as aphasia and evidence of persistent intracranial damage are not suitable for surgical treatment. It is obvious that the individual who is in a state of congestive heart failure is not suitable for surgical treatment. It is important to mention such contraindications since occasionally patients who in reality are bordering upon extremist are referred for operation. It may be argued in such individuals that if something is not done for the patient he is certain to die in the near future. This is usually true. However, once a patient has shown irreparable damage he should not be subjected to surgery. Surgery has little to offer such individuals in the first place and perhaps what is even more important every time such an individual succumbs to surgical treatment then other individuals who might well be helped by the procedure are frightened away from this type of therapy. All of the patients upon whom we have operated have previously had a trial on medical management.

Surgical Procedures Used in the Treatment of Hypertension

The procedures used by surgeons in the treatment of hypertension have shown progressive phases of evolution since this type therapy was first indicated. The subdiaphragmatic splanchnic resection was popularized by Craig³. In this operation the splanchnic nerve was cut on both sides below the diaphragm. Some individuals were benefited by this procedure. However, the percentage of patients showing improvement following this operation was very small and consequently the operation was later abandoned. The supra-diaphragmatic splanchnic resection and sympathectomy were introduced and popularized by the late Max Peet⁴ of the University of Michigan. In this operation the splanchnic nerves were sectioned above the diaphragm and a portion of the greater and lesser splanchnic nerves along with the lower thoracic sympathetic ganglia were removed. A much larger number of patients have been benefited by this procedure than was the case with the more conservative subdiaphragmatic splanchnic resection of Craig. In 1943 Smithwick⁵ introduced the concept and technique of the thoracolumbar sympathectomy whereby the splanchnic nerves, celiac ganglion, and the upper lumbar and lower thoracic sympathetic ganglia were removed. By this combination Smithwick was able to report further improvement in the results obtained from sympathectomy in the treatment of patients with severe hypertension. Smithwick developed a technique in which a portion of the eleventh and twelfth ribs were resected and the pleura was stripped away from the chest wall. The lower thoracic ganglia along with the greater and lesser splanchnic nerves were then removed from within the thoracic cage and an opening was made in the diaphragm and the celiac ganglia, first and sometimes second lumbar ganglia were removed. Since the development of this method by Smithwick there have been various modifications and extensions of the technique. Poppen⁶ uses an incision somewhat similar to that of Smithwick but resects a portion of one of the superior ribs and also a portion of one of the lower ribs. Through the tunnel which results after the pleura is stripped away, Poppen removes extensively the upper thoracic sympathetic ganglia as well as the upper lumbar ganglia and the splanchnic nerves. Poppen's method has been very successful in his hands. However, for the general

surgeon, it is not as attractive as one of the more open methods. In my opinion when working around such structures as the vena cava or the aorta it is highly desirable to have adequate exposure in order to control hemorrhage which might result from any unforeseen occurrence. More recently Hinton⁷ has advocated superperiosteal removal of the tenth rib with the wide separation of the pleura from the diaphragm. Following this an extensive thoracolumbar sympathectomy can be carried out with very adequate exposure. When we began to carry out thoracolumbar sympathectomy in 1946 we used the Smithwick approach exclusively. We now feel that the Hinton approach is easier on both the patient and the surgeon.

Grimson⁸ has advocated total paravertebral sympathectomy for the treatment of hypertension. This is the most extensive operation which has been used for this condition. A number of years ago the author and Dr. Grimson were co-workers in the surgical experimental laboratory of Dr. Dallas B. Phemister at the University of Chicago. Studies were made on normal dogs both before and after complete paravertebral sympathectomy^{9,10}. Grimson has more recently applied this operation to patients and is encouraged by the results which he has reported. I, personally, feel that this operation carries an increased mortality and morbidity and do not feel that the results reported justify the more extensive operation. Another objection to the more extensive operation is the fact that the patient in the deep South is handicapped by having such a large area of the body from which he is unable to dissipate heat through the sweating mechanism. It is readily apparent from the procedures mentioned above that the problem at the present time is not settled. I would like to point out that sometime within the next several years we are likely to see some other procedures which will be better than anything which has been demonstrated to date. In the meantime patients deserve to have offered them the best of the available methods which have been developed.

Results of Surgical Treatment of Hypertension

The best reports regarding extensive studies dealing with the long term results of the surgical treatment of hypertension have been made by Smithwick, Peet, and Poppen. Due to the fact that I was in the armed service

my cases do not date prior to 1946 and it therefore seems unwise to draw conclusions from the cases which I have personally operated. However, it is fair to state that the majority of patients who have undergone thoracolumbar sympathectomy have obtained definite symptomatic improvement following the procedure. A small percentage of the patients following operation have had a normal blood pressure which has persisted to the present date. The majority of patients show a marked symptomatic improvement and a definite decrease in the blood pressure although the blood pressure is not always returned to a normal level. A small group of patients whose symptoms are relieved return to useful occupations in spite of the fact that the blood pressure has not been definitely altered. Perhaps 4 or 5 per cent of the patients do not show improvement symptomatically or in blood pressure determinations. It is recognized that there is an inherent tone possessed by blood vessels and under certain conditions sympathetic nerves may regenerate. Only time will tell. It is not possible at the present time to predict the final result.

Summary and Conclusions

1. Cardiovascular renal disease with hypertension as one of the cardinal symptoms is the leading cause of death.
2. The diagnosis of essential hypertension is made by exclusion of specific etiological causes.
3. The majority of patients with hypertension have in the past and will in the future be properly managed by the family doctor and the internist.
4. In an individual who does not have irreparable cerebral, cardiac, or renal damage and whose condition has become progressively more severe in spite of medical management, surgical treatment is often indicated.

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Chills and Fever versus Malaria*

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THE WORD "versus" in the title of this presentation was deliberately chosen with optimistic view of laying the foundation for a general idea that, in the United States, chills and fever should not necessarily be associated with malaria. After examining the records of reported cases over the last four years in the state of Mississippi, I begin to wonder if this paper is not superfluous. Like the quotation, "All that glitters is not gold," one might suggest that the Mississippi doctors have already coined a similar saying, "All that shivers is not malaria."

This may reasonably be deduced from the records of the state health department which are, in brief, as follows:

Total cases of malaria reported	
in 1945	18,000+
Total cases reported in 1946	17,000+
Total cases reported in 1947	877
Total cases reported in 1948	125

I am informed that as of January 1, 1947, malaria became reportable by the identity of the patient, a requirement which exists in all but two states. Furthermore, since July 1, 1948, an offer of \$5.00 per blood positive case resulted in not more than \$50.00 being paid out.

I believe these figures indicate that for all practical purposes, except a few sporadic cases of uncertain origin from time to time, malaria will soon disappear completely from the southern states.

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I do not propose to discuss why this reduction has occurred because over the past decade, many factors have operated toward this end. Improved economic status with improved nutrition, increased medication, more screened houses, more spraying against insect pests in general (later DDT, in particular) as well as the development of new and better drugs.

Most important, I believe, is the realization by physicians generally that malaria is a blood infection which can only be diagnosed by finding the parasites in the blood.

My own conception of malaria in the broad sense is that it is not a single disease, but rather two diseases—that caused by the falciparum infection with its very special behavior, and that caused by the other species, namely vivax and quartan, the behavior of which may conform more closely to the generally accepted chills and fever cycle. With falciparum infections especially, symptoms may be ignored and often with vivax and quartan as well, the so-called classical (periodic) fevers may be modified or absent.

During my first year at Tulane, 1943-44, I was advised of the existence of approximately seventy-five cases of chills and fever. As I never found a single parasite in any of them, they finally stopped telling me about them. Cooperation such as that was not welcome. Today I am only asked to see such cases in which periodic fevers have persisted for some time. I have yet to see my first case of malaria naturally acquired in the United States.

In the past five years we have deliberately infected with malaria approximately five hundred patients—the majority by blood inoculation with a certain number through the bites of infected mosquitoes. Throughout the country many

hundreds of persons either undergoing therapeutic malaria for paresis or as volunteers in drug testing programs have been infected. A few, it is true, do not develop infections; others have parasitemias without any clinical manifestations. Of the thousands of successful infections, not one has shown a sign of temperature or other reaction without parasites being present or appearing within 24-48 hours.

In short, single brief examinations of a well-made thick blood film on three successive days should demonstrate malaria parasites if they are present. Not only is the thin blood smear too difficult to stain properly, too tedious to examine, but it is particularly prone to artificial conditions which cause a wrong diagnosis. Too many patients receive quinine or atabrine because of stained platelets lying in the shallow depressions of the discoid red blood cells.

I should like to call attention to something that I consider a common fallacy in the diagnosis of malaria which is all too widespread. No matter how meager their acquaintance with the other forms of parasites may be, almost everyone recognizes the unusual gametocyte of falciparum. Very frequently the diagnosis is made on the discovery of these forms alone. Certain contaminating molds and fungi yeasts all too frequently present shapes resembling the well-known crescent. These are eagerly seized upon as evidence of malaria despite the fact that **they do not show any pigment**, an important element in every well-grown malaria parasite. This is also in complete oblivion to the fact that gametocytes *per se* do not cause symptoms. They are merely circulating in the blood, waiting for an "air lift" to transport themselves to another planet. Anyone who requires gametocytes for the diagnosis of a falciparum infection does not understand the behavior of that infection. Crescents simply say, "Eight days ago (or more, up to sixty) this patient had asexual symptom-producing forms of the parasite in his peripheral blood."

In our experience of two hundred single or repeated attacks of vivax malaria in ex-servicemen, only one received treatment in the absence of parasites. He was a doctor who had spent two years in an area where the infection rate was extremely high and he evidently went through his relapse episodes with the number of parasites below microscopic level. I may say at this point that there are a very small number of ex-servicemen continuing to show malaria relapses from their wartime exposure. It is highly improbable that

more than one per cent will show attacks more than three years away from endemic areas. I did, however, see a young man some weeks ago who apparently had acquired his infection in Okinawa in 1947 so one should not forget that the Army still goes on into the outside world.

What, then, are the cases today that complain of periodic chills and fever or, equally common, those that have a number of vague symptoms appearing at more or less regular intervals. Many claim that they get relief from quinine or some other anti-malarial drug which was initially prescribed by a physician, or that they took themselves. Repeated blood examinations of these patients failed to show parasites at any time, (they are taught to make their own thick blood films and sent them in for the most meager of symptoms) nor has pigment been found in the bone marrow of a certain percentage of these cases.

In December, 1948, a forty-year-old salesman, whose military service had not taken him overseas, came complaining of general malaise, dizziness, nervousness, and an occasional fever blister especially in the summer and fall. During 1947 he took three courses of ten tablets of chloroquin. After each course he said he felt fine for about ten days. Repeated examination of his blood as well as of his bone marrow failed to reveal any parasites or malaria pigment in the latter. Careful examination failed to show anything except an extraordinarily dirty mouth with marked periodontoclasia. Two weeks after adequate dental prophylaxis and proper care of his gums the latter looked nice and healthy and the patient stated that he had felt better in the past week than he had for months.

During Easter, 1948, a doctor's son, a student of the sophomore class, spent his few days' vacation in a rural area. About two weeks later, he became ill. On Wednesday night he had a rather severe chill and a sharp rise of fever. This occurred again on Friday night. Two of his classmates secured a blood specimen on Saturday morning and brought it to my laboratory for staining. With such a history they were somewhat chagrined that the physician's father had calmly stated that he thought the boy had an upper respiratory infection, the "flu." However, a diligent examination of several thick blood films failed to reveal a single parasite. A number of similar cases in Alabama have shown positive reactions to the Newcastle disease from chickens. When any self-limited disease of about five days' duration terminates in the presence of

quinine or atabrine the drug automatically gets credit for the cure. Brucellosis and glandular fever may account for some of the more protracted illnesses.

It is, however, the more acute conditions that tend to resemble malaria clinically. When I was first in Venezuela in 1925 I was impressed by the persistence with which a rather superior type of men, such as geologists and engineers, constantly requested intravenous injections of neosalvarsan instead of quinine as a treatment for their "fever." My stock reply was always that if parasites were found in their blood they would receive the good old-fashioned quinine and, if that did not suit them, they could find some local practicing physician and have him give the desired injections. However, I was particularly disturbed by the statement of one rather elderly geologist, whose word I later came to take implicitly. He stated that he had had two or three attacks of fever in the past month, and had taken sixty grains of quinine a day for a week without any apparent effect. Four years elapsed before I was able to see in the blood of a young geologist, recently hospitalized after a trip from the same mountainous country in which many of these very men of 1925 had worked, the spirochetes of relapsing fever. Here truly were chills and fever in which malaria parasites could not be found and the spirochetes were only present during the time when the fever was elevated. Relapsing fever is already common in Texas and may soon be identified in some of the other southern states.

My earliest experience with chills and fever without malaria parasites also occurred in Venezuela. A Swedish railroad maintenance foreman on a wildcat well some thirty kilometers from the Colombian border, although living in a highly endemic area, refused to take quinine except when he was actually sick. Over a six-month period he had been treated twice for vivax malaria. He developed malaise, generalized aching, backache, headache, and afternoon fever with daily chills, or chills every other day. Not only did he lose his taste for liquor but also for food; and this, in a man who ate enormously, led to very rapid loss of weight. No parasites had been seen in repeated blood examinations for a period of over forty-eight hours and I was, therefore, forced to accede to his request for quinine. The liver was tender, the spleen palpable, leukocytes 9,000. Thirty grains of quinine daily for six days had no effect and were

stopped. He began to complain increasingly of a pain through the right side of the neck, which settled in the right shoulder blade. This was not relieved by any local application. His chronic cough was unchanged. I decided finally to send him one hundred miles by canoe and launch to a city where hospital care was available.

As the dugout, paddled by four men, rounded the downstream bend in the river, I struck my head in disgust as the light began to dawn—"Now I know what's the matter with that man—he has an amebic abscess!"

To complete the story, he reached the hospital about fifty hours later complaining of pain in the chest and dyspnoea. By morning he had coughed up copious amounts of sanguino-purulent material in which many amebae were found. With emetine he made a non-eventful recovery.

In 1942 I made the acquaintance of a highly intelligent rubber research worker in Africa who had finally decided that the local physicians were unable to do more for him than he could do himself. Periodic survey slides on him and on his wife failed to show parasites, but he would occasionally absent himself from work and take atabrine. One day he asked me what was the type of fever that caused a man to have fever for five days which subsided if he went to bed and took atabrine. Since he never came to the hospital a general examination was not possible. It was not until a night emergency call for a stone in the ureter resulted in his hospitalization that the discovery of enormous bilateral stag-horn kidney stones was made.

The first slide shows the temperature chart of the next patient who was hospitalized in Auburn, Alabama, in May, 1947. This patient, a 23-year-old white male, reached New Guinea in 1943 and returned to the United States in December, 1945. During this time he took atabrine and had several episodes which were probably acute attacks of malaria in October, 1944, October, 1945, and February, 1946. During 1946 he had repeated attacks of chills and fever, always with a negative blood examination. In November, 1946, a Veterans Administration report showed the finding of *Plasmodium vivax* following adrenalin administration. He took quinine continuously from December, 1946, to the end of March, 1947. On admission to the hospital he had complained of back pains so severe as to require morphia. Three daily urinalyses were reported as negative and the leukocytes 5,000. The temperature

chart showed twice-a-day spiking with chills before the temperature rise. He received ten grains of quinine every four hours for the first three days and then was given atabrine as indicated; and he continued to take atabrine (one tablet daily) until September. The casual observation of one or two tiny masses of pus-laden mucus floating above a rather heavy sediment of urates in a specimen passed in the office, resulted in this man's being referred to a urologist who discovered a left-sided pyelitis and torsion of the ureter. He has had no further attacks since treatment for that condition.

Slide No. 2 gives the temperature chart in relation to the hospitalization of the following patient:

A 19-year-old law student at Tulane developed a chill and fever and presented himself to a physician for care. History showed that he had lived all his life, until coming to school at Tulane, in a malarious district in Puerto Rico. He was diagnosed as having, and was treated for malaria while in Puerto Rico. With the present episode he was given some quinine tablets and sent to his rooms without blood examination. Chills and fever continued, so hospitalization was arranged. There, blood studies for malaria were done and were negative, but, because treatment had already been started, the negative results were ascribed to the drug and atabrine was ordered. When the patient did not improve, more quinine was tried, and then intramuscular quinine. The temperature curve continued with a perfect quartan picture and after four weeks of failure to respond, the patient was labeled a "resistant" case of malaria and we in Tropical Medicine were asked to see him. The white blood count was 11,000; with vigorous treatment, no results had been obtained. There were three good sized erythematous plaques, dull red and sharply circumscribed, on the wrists. These, with the elevated white count, suggested a pyogenic infection, notably chronic meningococcemia. The clinical picture cleared abruptly and later the blood culture was reported positive for Type II meningococcus.

More recently one of our old therapeutic malaria patients was admitted to the general ward with a daily afternoon chill and temperature up to 103°. Despite a leukocyte count of some 13,000 and redness and tenderness in one of the ankles, the possibility of malaria was first considered and repeated examinations were made. In view of the fact that we

had been using experimental drugs in doses that may not have been adequate in some cases, that was indeed a possibility, except that in this case the treatment had been an adequate course of chloroquin. This, in a blood-induced infection, is a guarantee of cure. Some days later the patient's joint was aspirated and pus obtained. Pleurisy, sub-acute bacterial endocarditis, cystitis and pyelitis have caused symptoms that have been treated as malaria on many occasions.

It is stated of native malaria that it is diminishing at such a rate that it soon may be extinct. Rapid methods of transportation are making it possible for patients in all parts of the world to be seen. It would be well, therefore, to remember that malaria infections, that is, genuine malaria, may not always produce pictures of chills and fever as is so frequently expected of them. Two examples may well be given to explain this. In these cases chills and fever were entirely absent. Perhaps the most unusual is that of an airplane pilot who had acquired vivax malaria in Central America previous to 1941. This man acquired vivax malaria and began to have itching vesicles on his arms and trunk every spring and summer following exposure to altitude or working in his garden in the sun. In 1943 in the course of a thorough examination a differential blood count was done and vivax parasites were accidentally discovered in his blood. His condition improved immediately upon treatment with atabrine. Parasites were last seen in his blood on March 20, 1945, during one of two subsequent relapses. There is no record of any further attacks after 1946. At no time did he ever have fever or chills accompanying these episodes.

Dr. Sodeman told of a prize case of a Brazilian sailor whose sole complaint was that of headache, which came on with the slightest provocation. This was more on the left side than on the right, and after a thorough physical examination he was even advised to have a ligation of his left temporal artery. However, falciparum parasites were demonstrated in his blood and adequate therapy eliminated symptoms permanently.

Last fall, a sailor, recently returned from Africa, had been briefly treated with quinine for fever on the homeward voyage. He had his appendix removed before falciparum parasites were seen in his blood.

Finally, to say something of the specific treatment of cases in which the real malaria

parasites have actually been found. Slide No. 3 shows the general approach to the treatment of malaria in an individual with regard to not only terminating the immediate attack but with the effect on a possible relapse. With all these three factors in mind the drug should be chosen. Slides No. 4 and No. 5 show the drugs that are used. In the second slide of this series it will be seen that only atabrine, chloroquin and paludrine are listed. Atabrine is included chiefly because of its availability. Chloroquin

is the No. 1 drug for the treatment and termination of the immediate attack. Less efficacious and more useful for prophylactic purposes is paludrine. Pentaquine and plasmochin are useful together with quinine in treating the underlying infection and eradicating the disease. So it will be seen that quinine alone has no place in the treatment of malaria today.

These last three slides were made from a mimeograph on treatment which is available to those who are interested.

Practical Aspects in Diagnosis of Pathology of the Genito-Urinary Tract in Children

Case report of Complete Reduplication of Left Renal Pelvis and Ureter.

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IN PEDIATRIC practice complaints which focus attention upon the genito-urinary tract are common; in fact, they comprise about 3 per cent of office practice. Symptoms or signs referable to this organ system may, of course, be primary or occur as a result of disease located elsewhere in the body. The pediatrician is in a most strategic position to recognize and treat diseases of the genito-urinary tract, since he often sees them in their earliest stages where correct diagnosis is the most important if we are to prevent irreparable damage or to correct stresses imposed by those congenital anomalies which are amenable to treatment.

As a result of newly acquired knowledge of the physiology of the kidney^{1,2,3} the number of diagnostic tests has increased in recent years. Although many of these are useful they can never take the place of a careful history and a thorough physical examination.

The purpose of this paper is to discuss some procedures which are most useful and applicable in private practice as aids in definition of pathology in the genito-urinary tract of children.

The History—The act of urination is essentially pleasurable, particularly in childhood. In health urine flows freely from the bladder without discomfort.

Complaints of pain or discomfort on urination are of signal importance. No child should receive less than a complete investigation for a history of "dribbling," urinating frequently in small amounts, or for enuresis. It may be emphasized here that our primary function as physicians and pediatricians is to rule out or-

ganic causes for any such symptoms before assuming them due to "nervousness" or any one of a host of similar ridiculous answers to the complaints.

Further important points in a good history are well known: a) intermittent or continuous fever, b) edema, especially about the face in the morning, c) headache which when accompanying mild edema is so frequently seen as early sign of glomerulonephritis, d) any increase in the size of the abdomen. The importance of age at onset of symptoms lies in the fact that those due to congenital anomalies are most often noted in very early life while those due to infection or foreign body are most often encountered for the first time in later childhood.

The duration of symptoms has important bearing on the probable extent of damage and hence prognosis.⁴

The Physical Examination—Physical examination of the genito-urinary tract is obviously somewhat limited due to its anatomical location. However, palpation of the abdomen does not as a general rule hurt the child and involves no frightening instruments; hence, it is a good place to begin a general physical examination. More time spent in gentle, careful abdominal palpation of a child will be rewarded by the earlier recognition of abdominal masses, some of which may be malignant and with this earlier recognition lead to a more prompt treatment.

During the examination of the abdomen any external defects should be carefully noted, and the umbilicus palpated for the swellings of urachal cysts.

Every infant and child being examined should of course have a temperature, pulse, and blood pressure accurately recorded. The latter is especially important for a child suspected of having genito-urinary tract disease. The child's blood pressure should be taken while he is lying down and with a child's size cuff. The usual systolic B.P. of infants and children ordinarily approximates 80 plus twice the age in years. Diastolic B.P. approximates 50 plus twice the age in years. Crying, of course, will render blood pressure readings unreliable to a certain extent but they should not on that account be totally ignored. Unsuspected elevations are frequently seen and justify increased concern as to cause and correction.

A. Laboratory Studies

1. **Urinalysis** remains the most important of all routine laboratory procedures. Special points to be emphasized when disease of the genito-urinary tract is suspected are: a) presence of pus, casts, and bacteria should be carefully noted by examination of a stained smear of centrifuged sediment for preliminary identification of organisms. Whenever indicated, appropriate cultures should be made.

2. **Catheterized** specimens are preferred in girls up to about four years, although after that age a clean-catch specimen may be satisfactory for bacteriologic examination. This is a specimen of urine obtained when the urinary stream once started is voluntarily stopped and then re-started, the genitalia having been previously cleaned with soap and water. If cultures are positive from such a specimen they should of course be checked by a catheterized sample.

B. The Blood

Practical information obtained from selected blood studies can be of considerable help. Such studies as a) white cell count, b) differential, c) sedimentation rate of erythrocytes, d) blood urea nitrogen, and e) urea clearance are within the scope of most offices and clinics and are essential in many cases for adequate study. It is only by using such tests that a fair evaluation of the patient's problem can be had.

C. Renal Function Tests

A large number of these are available for clinical use but for private practice there are three which yield the most information for efforts expended.

1. Concentration Studies⁶

The kidneys of even young infants are quite capable of concentrating urine. Testing for this ability is important. It can be done by a modification of the Fishberg method which

is simple and in most instances easily carried out. Normally, the specific gravity of the urine of infants and children ranges from about 1.006 to 1.012. The modified 12-hour Fishberg Test should yield two specimens with a specific gravity of at least 1.018 to 1.020. Limitation of the concentrating ability is evidence of impaired renal function. More accurate tests are useful but for practical purposes this one ordinarily suffices.

Whenever catheterization is to be done it should be planned so that the amount of residual urine in the bladder after voiding can be ascertained. This is an important observation and may aid in establishing the presence of lower obstructive anomalies.³

2. Phenosulfonthalein Tests (P.S.P.)

One cc. of this dye is injected intravenously as rapidly as possible right after the bladder is emptied. Specimens are then obtained, by forcing fluids if necessary, for the next two hours at approximately 15-minute intervals. Normally about 75-85 per cent of the dye will be excreted in two hours. For general office practice the 15-minute specimen has the greatest value since normally 35 per cent of the dye should appear within this time.

Although it is well known that this test is not very precise, its simplicity and the fact that it does give a useful general idea as to function, recommends it for screening purposes.

3. Intravenous Urography (I.V.P.)

The value of this procedure is great. It should be used if possible whenever disease of the genito-urinary tract is suspected. It is the best single method for determining the site and nature of obstructions and yields considerable information as to function too.

Proper preparation of the patient here is highly important. Generally, the procedure is as follows: no food is given after the usual 6 p.m. meal; fluids are restricted after midnight the night prior to testing; one-half to one hour before the test infants are given an S.S. enema saline cathartic two hours before testing.

Intravenous urography is not difficult in children or infants. Reactions to diodrast used in correct dosage are rare but it is very important that the x-ray technician be familiar with the proper procedure and use of the Bucky diaphragm. Otherwise there may be undue exposure to x-ray and waste of valuable time. Ordinarily a preliminary KUB film is taken for the demonstration of any stones and to note the amount of gas in the bowel as undue amounts of the latter may obscure pyelogram

shadows. Following injection of the dye which is done at a rate of 6-8 cc./min., films are obtained at 3-5-10- and 15-minute intervals for the demonstration of the outline of the tract and rate of clearance of the dye to the bladder.

The following case may serve to illustrate the value of several of these procedures.

Case Report

S.C., a two-and-one-half-year-old girl was first seen in July; irregular straining at urination had then been noted since she was one year of age. Voiding had always been in small amounts, ten to twelve times daily and two to three times at night, often accompanied by marked straining. For three weeks she had had daily fever usually in the late afternoons, the rectal temperature often reaching 104° F. Chills had been apparent on several occasions, and one generalized tonic and clonic convulsion had seemed to be controlled by antipyretic measures.

She had been hospitalized elsewhere and treated with penicillin for one week without effect. No diagnosis had been established.

Birth history seemed non-contributory. There had been remote and very occasional contact with an elderly relative who was thought to have tuberculosis.

The dietary history was satisfactory except that the child had been drinking milk from a cow which had not been "tested", and the milk had not been boiled. The toddler had received immunizations for diphtheria, tetanus, pertussis, smallpox with no untoward reactions.

Physical Examination—Temperature 103.6° F., (rectal), B.P. 90/50, pulse 110/min.

Generally, the child appeared well-developed and fairly well-nourished, pale, restless, and irritable. On the skin of the face and neck were seen several pustular, irregular, inflamed lesions, some open, exposing raw, serum-oozing surfaces. These appeared definitely impetiginous in character. There was a faint apical blowing systolic murmur; otherwise, physical examination revealed nothing of note.

A white blood cell count was 15,000 (60 per cent polymorphonuclear leucocytes, 35 per cent lymphocytes, 2 per cent monocytes, 2 basophils, 1 per cent smudges.) Erythrocyte sedimentation rate (Wintrobe) was 15 mm/hr. corrected.

Hemoglobin 11.0 gms. A voided specimen of urine revealed specific gravity of 1.012, 8-10 WBC/HPF, no RBC's, no casts, and occasional

organisms. Tests for albumin and sugar were negative; x-ray of the chest was negative.

During the next few days the impetigo cleared uneventfully with local care and two doses of penicillin and the temperature ranged lower, to 101-102° F.

The usual agglutination tests for typhoid, paratyphoid, brucellosis, tularemia and typhus were negative. Urine obtained by catheterization after voiding revealed gram negative rods on the stained smear of centrifuged specimen and it was noted that there was slight resistance to the passage of the catheter. Residual urine amounted to 50 cc.

An intravenous urogram was then done which revealed a complete reduplication of the left kidney pelvis and ureter. Dye was seen in the bladder on the 5-minute film, which indicated good renal function and no evidence of obstruction in the upper urinary tract.

With these evidences of infection and anomaly, Dr. Cyrus Johnson was consulted. He confirmed the findings noted on intravenous urography by retrograde examination and noted a separate opening in the bladder for the extra left ureter. He also found a small mass of tissue bulging into the posterior urethra from the left lateral wall at the bladder neck, causing definite partial obstruction at that point. There was no evidence of a true valvular formation. This mass appeared to be a median bar of hypertrophied muscle.

The child was hospitalized and treated for two preoperative days with sulfadiazine 0.25 gm./kilo/24 hrs. and penicillin 30,000 units every three hours. The mass at the bladder neck was then fulgurated.

Intravenous fluids postoperatively for the first day were given in amount of 60 cc./lb. After operation she was relatively afebrile although, on two occasions, *E. coli* were found in the urine along with some pus, and the temperature was elevated slightly. On each of these two occasions the infection was cleared by sulfadiazine 0.25 gm./kilo/24 hrs. for two days and has not reappeared for eight weeks nor has there been any fever. Sphincter control has been gradually improving since surgery.

DISCUSSION

Complete reduplication of pelvis and ureter is one of the commonest anomalies of the urinary tract. It is not as common as partial reduplication of the tract and in most patients it is unimportant as a cause of stasis or infection. As in this little girl it may often be found

along with other anomalies which are more important.

Meredith Campbell in 1937 after studying 12,080 autopsies in children reported simple reduplication of the kidney in 48 cases.⁵ It was seen in association with renal agenesis twice, and with renal ectopy three times. Complete reduplication of the ureter was seen twice in association with renal agenesis, twice with renal ectopy, twice with horseshoe kidney, and four times with polycystic kidney.

Perhaps it was fortunate that this child had symptoms so strongly indicative of urinary disease which led to early study and their correction, because many anomalies of this tract produce little or no symptomatology.

As for obstruction in the posterior urethra this is seen practically altogether in boys and is most often due to posterior urethral valves. Hypertrophied muscle bars are much less common in either sex.

It is felt that this patient's story emphasizes an old lesson—that it is important to complete investigation of the genito-urinary tract

for many of its so-called "minor" disease states. Conditions of which the physician may be unaware can at times be brought into proper focus for protection of the future health of the child.

CONCLUSION

Some practical and useful means for study of disease in the genito-urinary tract in children are discussed and the story of a child who was benefited by their application is presented.

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Amoebiasis Diagnosed by Urinary Findings*

ROBERT B. McLEAN, M.D., F.A.C.S.
Jackson, Miss.

THE EXISTENCE of urinary amoebiasis has been strongly questioned by Craig¹ and others in the absence of intestino-urinary fistulas. However, Watson² says that there are four possible routes of entry into the urinary tract:

1. Direct access via urogenital opening and the urethra.
2. Entry from gut into bladder via fistula.
3. Entry into kidney by extension of liver abscess.
4. Metastatic extension from intestines via blood or lymph channels.

He states that "Unless *Endamoeba Histolytica* can be shown to be present in the gut, there is practically no possibility that it will be present in the urinary tract since cysts are only known to hatch in the gut." However, he also stated that amoebae are known to retain motility in undiluted urine upward of two hours, and expresses the belief that with the aid of a break in the covering epithelium, they might become embedded in the underlying tissues. He also writes that the diagnosis of urinary amoebiasis is difficult because active amoebae will be found only in fresh urine and the similarity between them and certain cells is great.

As a disease, amoebiasis presents multiple symptoms because of its numerous complications. Davis³ lists these as ranging from intestinal perforation through the gastrointestinal tract including the gall bladder and spleen, to the lungs, brain and urinary tract. Warthim⁴ reports an autopsy case with amoebic disease of the epididymis, and Herman⁶ reports a penile lesion. Furthermore Craig⁷ suggests chronic central nervous system effects. In recognition of this, D'Antoni⁵ decries the lack of care in nomenclature as well as wider recognition of the condition in contrast with the old concept of amoebic dysentery. He also expresses the need for a real curative drug.

Treatment of amoebiasis is unsatisfactory. Emetine, iodine, arsenicals, and recently chloroquine³ are suggested as agents to be tried.

This discussion will make no effort to enter controversial grounds. It is merely a brief resumé of the ten cases which have been literal-

ly stumbled upon in the last five years. You may note that seven of them were found in 1944 and 1945, and only three in 1948 and 1949. I fear this is not because there have been no other cases. The first case and the first group were found by a superb technician then working for me who in the first instance called me in to see what "that crazy thing" under the microscope was. We did not know. However, with the aid of books we narrowed it down and made a tentative diagnosis. In trying to get help, several pathologists examined the slide but could not recognize it. Then the specimen of urine was centrifuged, little by little, and the concentrate then taken to the State Board of Health laboratory where the diagnosis was confirmed. This procedure was done in all ten cases, catheterized urine being used on all females. Consequently, if anyone wishes to question the diagnosis, go to the laboratory. There is no intention of belittling the pathologists referred to. The incident is mentioned primarily to indicate that few of us can recognize amoebic cysts, and the time element is mentioned to indicate that I as well as others do not search for them often enough and hard enough. The second reason for mentioning these incidents is that they give me the opportunity to ask you to consider this not as research, but as rehashing this series of cases. Again no claim of perfection is offered. Only elements of the history, physical, laboratory, and treatment which are considered relevant are presented. And I might add that these cases are "as is."

The first case was fortunately most cooperative. In fact, she became interested in the subject both literally and figuratively. Unfortunately, this was not always true.

CASES:

Case 1. 6-20-44. H.G., a white female 18 years of age complained primarily of pain in the lower abdomen and nausea, but normal stools, for 24 hours.

P.H.: Appendectomy, age 16. Tonsillectomy. "Slight intestinal upset" age 8.

Physical: T-99.2, Pulse 84. Urine-many PC, few RBC, large cells which looked like amoeba.

Intravenous pyelogram: negative.

* Read before the Central Medical Society, Jackson, Miss., November 1949.

Stool: *Endamoeba Histolytica*, motile forms, reported by State Laboratory.

Urine: *E. Histolytica* cysts and rounded up trophozoites resembling amoeba present, reported by State Laboratory.

Cystoscopic examination by Dr. I. C. Huggins was reported as showing ulcerations and granulomatous lesions in the trigone, extending in decreasing severity on the floor of the bladder and around the ureters. The bladder urine contained amoebic cysts and rare amoebae.

Right Kidney: cysts and occasional amoebae.

Left Kidney: rare cyst.

Proctoscopic Exam: negative.

Treatment: Emetine in 1 grain doses given for nine doses with no change in the urinary picture although the stool was reported negative. Mapharsen 0.3 gm., then 0.6 gm. was given at weekly intervals with decrease in the number of cysts. After the third dose of mapharsen 0.6 gm., very few cysts were present. Another round of emetine with carbarsone given concomitantly was used. The stool again was reported negative. The urine was found to be negative for cysts and this was confirmed by the State Laboratory. Four months later another negative urine was reported. Twenty months later another urine was found to be negative.

Case 2. 12-30-44: M.K., a white female 25 years old complained of abdominal cramps and diarrhea of 24 hours duration. This was tentatively diagnosed as an acute intestinal upset. She was not seen again for six months at which time she stated that she had not been up to par, but had done nothing about it until, on examination for the nursing corps, she was rejected because of a temperature of 99.4. Her temperature was taken at 2 p.m. and found to be 99 with a pulse of 88. X-ray of the chest was negative. She kept a temperature chart for a week and found that it went to 100.2 on occasions and took Groves Chill Tonic.

P. H.: A tumor was removed from her knee at age 13, the scar of which later became inflamed. Appendectomy at age 14.

Physical: Negative except for urine which showed a moderate number of pus cells and "Amoebic cysts present, being the morphological appearance of *Endamoeba Coli*" was reported by the State Laboratory.

Treatment and follow-up: She was given one dose of mapharsen and seven days of carbarsone. One week later only a few cysts were present and she reported temperature on

only two occasions. Two weeks after treatment, her urine was negative and her temperature normal. Six months later she came in for another examination and cysts were again found. She was given one dose of mapharsen and 180 Diodoquin tablets. She has not been seen again.

Case 3. 6-1-45: J.M.L., a white female 28 years of age complained of recurrent cystitis with onset 24 hours before. She had had the condition every June for five years. She stated that doctors usually treated it simply and it finally was temporarily relieved, but that she went to Johns Hopkins about it once and they considered it serious. Unfortunately she did not remember the diagnosis.

P.H.: Generally good. No children. Menstrual irregularity, marked.

Physical: Negative except for urine which showed pus cells, some blood, and amoebic cysts reported as *Endamoeba Histolytica* by the State Laboratory.

Treatment and progress: She was given eight doses of emetin followed by a course of carbarsone. The stool was reported negative, but the urine still contained numerous cysts. She was given mapharsen on nine occasions with a decrease in the number of cysts. Diodoquin 180 tablets was given. Four months after she was first seen, the urine was negative for cysts. A month later another negative urine was obtained. Four months later it was still negative, and finally in July, 1946 it was again negative and she had missed her usual June cystitis.

Case 4: 7-10-45. C.T., a white female, 47 years of age seen with indefinite soreness as when "Stomach was reported stopped up after x-rays 4 years ago," and with indefinite complaints of trouble in her chest.

P.H.: Worms 4 years ago with preceding diarrhea.

Appendectomy—1930

Hysterectomy, supravaginal, resection of left ovary—1933

Two children, youngest 27 years

Physical: Abdomen—two scars, moderate tender coecum.

Multipara, perineum quite poor.

Urine—Moderate number of pus cells with clumps.

Stool—negative.

Treatment and follow-up: She was given a week's supply of sulfapyridine and asked to return for follow up. A week later she reported improvement. The urine showed occasional clumps of pus cells and amoebic cysts, report-

ed as being *E. Histolytica* by the State Laboratory. Urine culture was reported negative. She was given three doses of mapharsen, but failed to report for further treatment or follow-up.

Case 5: 7-27-45. C.M.W., a white female, age 29, complained of pain in the right side of her abdomen beginning after her first child was born two years ago.

P.H.: Pyelitis several times for which she had been hospitalized twice; kidney stone on left 3 months ago.

Right knee operated for some reason several years ago.

G. I. upset of short duration several months ago.

Physical: Multipara with poor perineum and stellate laceration of cervix.

Urine: Few pus cells and amoebic cysts, reported as *Endamoeba Histolytica* cysts by the State Laboratory. Culture—negative. Stool—negative.

Chest: X-ray—negative.

Treatment and progress: Four doses of mapharsen were given with clinical improvement and the urine was negative three months later.

Case 6: 6-16-45: B.W., white male, age 11, from a boy's school where a whole group was acutely ill with diarrhea. He complained of abdominal pain, temperature daily to 102° for two weeks, but no diarrhea.

Physical: Mild abdominal tenderness.

Urine: Negative, except for amoeba cysts reported by the State Laboratory as *Endamoeba Coli*.

Stool—Negative for parasites. Culture—*Bacillus Morgani*.

WBC—8,700, P—58, L—40, M—2, Sed.—21; Malaria—negative; Agglutination for typhoid—1/160. Blood culture—negative.

Treatment and progress: He was prescribed a course of carbarsone but was not seen again. The information obtained was passed on to his family physician.

Case 7: S.W.D., a white female, age 30, complained of epigastric pain and nausea for two weeks.

P.H.: Appendectomy, suspension, left ovary removed—1942.

Malaria.

One child—1940.

Constipated. Menstrual irregularity. Low grade temperature in 1943 of undetermined origin, although blood agglutinations and culture, and malaria smears were examined.

Physical: Abdomen—mildly tender, coecum full.

Urine: Albumin—2 plus, amoebic cysts reported as *Endamoeba Histolytica*.

Stool—negative.

Treatment and progress: She was given two doses of mapharsen, then discontinued treatment. Four months later she came in complaining of her left breast, which was normal. One urine specimen was negative. Nine months later she came in complaining of pain in her left side. Another negative urine was found and another negative stool.

This case is not considered a cure, but rather an inconstant positive that would not cooperate, only coming in for a separate and distinct complaint as it occurred as long as it was present.

Case 8: 10-15-48: W.R.J., a white female, 36 years old, complained of menstrual irregularity, nervous rigors, aching of arms and shoulders, then two weeks later of fever of 99.4 in the morning for two weeks, and two weeks later of temperature of 100°.

P.H.: This young lady has been a patient for eleven years. Prior to that she had had malaria. Her first child was born at 8 months following a convulsion, her second at 8 months, and an abortion in 1934 at 4 months for kidney trouble. During the last eleven years she had a bleeding corpus luteum cyst and her appendix removed in 1939, a left salpingectomy in 1940 for a left tubal abortion, and many minor ailments.

Physical: Temperature—99.6, Pulse—96 on 10-5-58.

Urine: Mucous, epithelial cells, a trace of albumin.

Stool: negative.

WBC—13,100; RBC—4,400,000; Hb—86; P—78; L—14; M—8. Malaria—negative. Heterophile antibodies—negative; Cephalin flocculation—negative.

On 10-13-48, the liver border was tender, but not low. Hb—94 per cent; RBC—4,700,000; WBC—10,700; P—76; L—17; M—6; E—1. Blood culture—negative. Urine—amoebic cysts reported as *E. Histolytica* by the State Laboratory.

Treatment and progress: She was given five doses of emetine, a course of carbarsone, and finally three doses of mapharsen during the next five weeks. Urine was then found to be negative and this was confirmed by the State Laboratory. Another stool was negative. She reported only an occasional temperature eleva-

tion to 99 degrees in November 1948, and has offered no further complaint.

Case 9: 11-4-48—T.C.M., a white female 26 years old, complained of inconstant pain in the epigastrium, unrelated to meals, and a whole list of other things:

P.H.: Pyelitis. age 3, 10, and 14.

Appendectomy.

Miscarriage in June 1943. Then she settled down to business and in 1947 she had her third normal baby. She is Rh negative, her husband and first baby are Rh positive.

In April, 1947, she had a bowel upset a week for which she did not obtain medical aid.

No hypertension and no albuminuria was noted until 6 weeks after the last baby in January 1948 when it was 4 plus. After that it averaged 2 plus, the specific gravity ranged from 1.004 to 1.020. In June 1948 she again had a transient diarrhea for two weeks.

Physical: Shottiness of glands of neck. Tonsils out.

Reflexes hyperactive, but equal.

RBC—4,550,000; Hb—90; WBC—8,350; P—66; L—25; M—9.

Urine: Alb.—3 plus.

Stool—negative.

She was referred to a urologist who reported albumin from the right but not the left kidney. On 11-4-48, a urine specimen was examined for amoebic cysts and reported by the State Laboratory as showing cysts of *Endamoeba Histolytica*.

Treatment and progress: She was given five doses of emetine and a series of carbarsone. Then on 11-21-48 she was given mapharsen after which she had an acute diarrhea. On 11-30-48 she was again given mapharsen. This time she had a tremendous reaction with diarrhea simulating acute arsenical poisoning. Amoebic cysts were reported positive nine days later, but two months later she was reported negative.

Case 10: 7-23-49—G.B., a white female, 39 years old, complained of indigestion and a rash on her face. She was referred to a dermatologist who diagnosed lupus erythematosus

and raised the question of origin from some toxic source.

P.H.: Arthritis of hands, transient.

Appendectomy and one ovary out.

Hemorrhoidectomy and fistulectomy—1944.

Physical: Weight 85 pounds. Right kidney enlarged. Liver edge low and tender.

RBC—3,600,000; Hb—79; WBC—19,450; P—92; L—6; M—2; Sed. rate—22 mm.; blood agglutinations—negative. Blood culture negative.

Gall bladder and G.I. x-rays showed spasticity of descending colon, enlargement of liver, and visceroptosis.

Urine: Monilla and amoebic cysts reported as *Endamoeba Histolytica* by the State Laboratory.

Treatment and progress: She was given a series of five doses of mapharsen and then carbarsone and some iron. Two months later her blood count showed: RBC—4,600,000; Hb—97; WBC—8,500; P—66; L—30; M—3. She had gained a pound. She stated that she felt better than she had for years and the skin lesion had gone. Urine on 10-29-49 still showed a few cysts and motile forms of *Endamoeba Histolytica*. Further treatment will be necessary.

SUMMARY: Ten cases showing amoebic cysts in the urine are reported, two being *Endamoeba Coli*, and eight being *Endamoeba Histolytica*. Stools for cysts were found positive in only one case, negative in eight cases and no stool was obtained on one case showing *Endamoeba Coli* cysts in the urine. Abdominal pain was the primary complaint in eight of the ten cases.

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Aureomycin*

LeROY B. BRACKSTONE, M.D.
Corinth, Miss.

IN HIS *Essay on Criticism* Alexander Pope said "Be not the first by whom the new is tried nor yet the last to cast the old aside." With this idea in mind aureomycin is a drug that fits in this category at the present time. It has been used in experimental animals for more than two years and recently has been used in many diseases in humans. Of these are diseases which are penicillin-resistant, streptomycin-resistant, and streptomycin-dependent organisms; and that it is highly effective against most strains of *Rickettsia* as well as viruses of the Psittacosis-Lymphogranuloma Venereum group¹, also in patients who exhibit severe and uncontrollable sensitivity to these drugs.

I thought the name aureomycin was derived from the Latin word aurum, meaning gold, and I associated the name of the drug with the price of same but actually it is a yellow crystalline antibiotic obtained from the mold *Streptomyces Aureofaciens* thus the name is associated with the color of the product and not the price.

Aureomycin hydrochloride possesses bacterial activity against numerous gram-positive and gram-negative bacteria and is more active in an acid than in an alkaline medium. This is unlike streptomycin. Because of its wide range of usage the dose of aureomycin varies from 10 to 100 mgms. per kilo per body weight per day given in 6-12 doses depending upon the type and virulence of the infection. Generally speaking, the best results have been obtained by giving the severely sick patients a total of 60 mgms. per kilo body weight per day. The initial dose should be one sixth of the total daily dose at hourly intervals for three doses, then one sixth of the estimated dose should be given at four-hour intervals until the temperature has been normal for twenty-four hours. For example, a man weighing 150 pounds should receive about three of the 250 mgms. capsules every hour for three doses and then three capsules every four hours until the temperature has been normal for twenty-four hours. At this time the basis for the total daily dose should be reduced by

one half or to 30 mgms. per kilo body weight. This is divided into four parts and is given at six-hour intervals until the infection is eliminated².

It has been shown that after a single oral dose of 0.5 gms. and 0.75 gms. of aureomycin given to fasting normal subjects, antibiotic activity was recovered in the urine for more than thirty-three and fifty-five hours. The antibiotic was excreted in high concentrations between two and sixteen hours and the largest rate of excretion occurred between two and eight hours. The findings suggested that the optimum intervals between oral doses of aureomycin was about eight hours. Patients and normal individuals have been given aureomycin for periods of five to twenty days. The age range of these patients was three to forty-five. There has been no evidence of urinary impairment as measured by volume, specific gravity, albuminuria, microscopic examination, blood NPN levels, or excretion of phenosulphonphthalein. No jaundice or change in icteric flocculation or prothrombin has been noted. Repeated hematological examination of the peripheral blood has not indicated any evidence of anemia, hemolytic process, leucopenia or depression of platelets. Chemical examinations of the blood have not indicated any deviation in total protein, albumin-globulin contents or ratio, carbon dioxide, or alkaline phosphatase value. With the exception of a case report which will be given later, practically no allergic type of reaction followed the use of the therapeutic agent given orally, however, aureomycin has been given intramuscularly, a total of 3 mgms. per kilo body weight per day divided into four doses. This much has been tolerated but with signs of local irritation and because of this, oral administration has been preferred.

Although aureomycin has been used effectively in Rocky Mountain spotted fever, Q fever, typhus fever, Rickettsial pox, lymphogranuloma venereum, conjunctivitis, non-specific urethritis, primary atypical pneumonia, brucellosis and many others, the latter two are probably of more interest to us because we see more of these diseases than the former mentioned because of difference in geographical distribution. In Mississippi in 1948 there were

* Read before the Section on Medicine at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949.

reported six cases of brucellosis, forty-seven tularemia and forty-one of typhus fever. Aureomycin therapy has been of little or no value in typhoid fever, bacteremia, enteritis of the Salmonelli type, gonorrhea and others.

In primary atypical pneumonia the diagnosis is based on the history and signs of disease of respiratory tract coupled with roentgen evidence of pulmonary involvement which cannot be associated with any of the known bacterial or Rickettsial agents of the disease either by cultural or serological study. In the two cases that I have treated the onset has been gradual with a non-productive cough, fever, headache, malaise and an absence of initial chill, sudden onset and bloody sputum. In one case the leucocyte count was about 5000 and in the other, 17,000. In addition to aureomycin in the dosage suggested by Long, the patients were given penicillin. The penicillin was given for the purpose of taking care of secondary organisms or in the case of a mistaken diagnosis. Assuming that the diagnosis was correct then aureomycin was the drug that overwhelmed the infection because treatment with sulfadiazine or penicillin is not associated with clinical improvement in uncomplicated cases.³

Some cases of brucellosis have been treated satisfactorily with sulfadiazine, streptomycin or both. Then aureomycin came into use and after further observation of Duggar, Spink and his colleagues suggested that aureomycin alone was like other previously available methods, that is, suppressive but not curative.^{4,5} Harrell and Barber advocate the use of a combination of aureomycin and dihydrostreptomycin in the treatment. The recommended plan of treatment consists of the administration of approximately 3 gms. of aureomycin per day by the oral route combined with the simultaneous administration of 2 gms. of dihydrostreptomycin per day intramuscularly. For the acute brucellosis the average course of treatment should be twelve to fourteen days. In the treatment of culturally proved brucellosis with localized lesions (brucellosis with complications) the course probably should be extended from 21 to 48 days.⁶

CASE REPORT

Dr. R. E. Shands, New Albany, Miss.

A twenty-eight-year-old veterinarian began to have night sweats and general malaise in December, 1948. Having contacted and worked with many cases of Bang's disease in cattle

during his daily routine, he immediately suspected being infected with undulant fever. He stated that most of his classmates had contracted undulant fever by this means. His blood was positive in a titer of 1:1280. He began to hear rumors of a new antibiotic which was very effective in this disease and obtained a supply of aureomycin hydrochloride in 250 mgms./kilo and took 12 capsules per day until a total of 64 capsules had been taken. He planned to continue much longer but at this stage he began to have general malaise and abdominal pains. He discontinued the drug and the symptoms in four days changed to a constant and severe burning sensation in the epigastrium accompanied by nausea and vomiting. In forty-eight hours these symptoms were accompanied by a burning of the rectum upon defecation and of the shaft of the penis upon urination. He used antacids combined with phenobarbital and heavy doses of bismuth, all without relief. Promptly after the above symptoms became established there began an excessive salivary secretion, which was both annoying and embarrassing, this excessive secretion continued through each night and would dampen the pillow. He states that the first three stools were buff-colored and he was positive that they contained blood. With frequent vomiting, and the ability to eat and sleep were lost due to pain, his plight rapidly became extreme and at this stage I examined and hospitalized the patient.

Physical examination revealed a young white male in obvious discomfort and showing of weight loss. The cheeks were flushed and the temperature was 101°. The skin showed no rash or other abnormalities. The sclera was moderately injected but there was no excessive lacrimation. The mucous membrane of the nose was only moderately reddened. The first impression on starting to examine the mouth was that of a virulent Vincent's angina. The tongue was ulcerative and edematous, the hard and soft palate was covered by punctate ulcerative lesions about 2 mm. in diameter. The gums were thickened, soggy, edematous and contained small ulcers. All of these areas bled easily upon touching. There was no foul breath or membrane. The lips were ulcerative on their contact surfaces. The small ulcerative lesions and reddening continued as far as a laryngeal mirror would show. One of the most remarkable findings was an excessive salivary secretion. Examination could only be con-

ducted for about a half a minute until the patient would have to expectorate a copious amount of viscid saliva. The only other noteworthy feature of the physical findings was a reddening and thickening of the rectal mucosa. This was enough to cause a slight eversion. Rectal examination produced pain but no blood. An examination of the urinary tract was contemplated by cystoscope but the pain of the patient was so great as to forbid this.

Laboratory examination revealed 9,200 WBC; 5,200,000 RBC. Blood smear was negative. The urine was concentrated but otherwise negative. A smear from the open lesions and gum margins showed only the normal flora of the mouth. Culture gave no additional information. No stool could be obtained.

There was 840 cc. of sputum expectorated in a twenty-four-hour period and the constant burning of the upper abdomen required large doses of barbiturates. The chloride loss by excessive secretion and vomiting made necessary the use of saline and glucose intravenously. Atrophine failed to slow the salivary secretion. Working on the basis of allergy to an antibiotic 100 mgms. doses of antihistamine every four hours failed to give relief or change any of the symptoms when given over a forty-eight-hour period. Partial relief from the burning epigastrium was finally obtained by the use of benzocain containing tablet* producing a partial anaesthetic effect on the mucosa of the stomach, thus the vomiting slowed and he was able to retain liquids and bland foods in small amounts. Three per cent gentian violet applied to the oral lesions three times a day gave the greatest comfort to the mouth.

Over a week's time the symptoms diminished, the need for sedatives and intravenous fluid decreased and the lesions of the mouth disappeared. There is at this writing about twice the usual salivary secretion and only an occasional epigastric uneasiness.

CONCLUSION

A case is reported of reaction to aureomycin hydrochloride characterized by inflammatory and ulcerative lesions of the mucous membrane of the G. I. and urinary tract and excessive secretion. This case failed to respond to antihistamine medication.

Nidoxital: pyridoxine hydrochloride*	
.....	50 mgms.
methionine	100 mgms.
nicatinamide	25 mgms.

* Made by Ortho Pharmaceutical Corp., Raritan, N. J.

benzocaine	100 mgms.
phenobarbital sodium	15 mgms.

COMMENT

I believe that aureomycin hydrochloride is effective in treating primary atypical pneumonia, viruses of the lymphogranuloma venereum group, and most cases of the Rickettsia if given in adequate amounts, especially in "loading" the first day's dose.

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DISCUSSION

Dr. L. L. McDougal (Tupelo)—I want to commend Dr. Brackstone on his most excellent paper and agree with him and Alexander Pope on not being the first to take up the new nor the last to lay the old aside.

In general, I believe that the newer drugs should be tried first in medical centers under controlled conditions before being sold for general use or written up in such magazines as **Reader's Digest**.

To get the best results from aureomycin or other of the new drugs we need more good bacteriological laboratories established over the state. At present a large percentage of us have to rely entirely on our clinical judgment and the trial and error system, as the patients are either well or dead before we can get a bacteriological report.

Chloromycetin*, another new antibiotic appearing on the market about the same time, has been found to be effective in the treatment of typhoid, *Salmonella* infections, bacillary urinary infection, as well as some of the

* Parke, Davis and Co.

rickettsias mentioned above. There is considerable overlapping of the two drugs.

Polymycin, still another new antibiotic, has very strong antibacterial activity but due to its toxic effects on the kidney, has not been in general use.

In general there have been few side effects in toxic reactions reported from the use of aureomycin. There has been an occasional temporary drop in blood pressure and rise in temperature at the onset of treatment, but when smaller doses are administered initially this is not so likely to occur. Nausea and vomiting and diarrhea have occurred but seldom severe enough to discontinue the drug. This can usually be controlled by the simultaneous use of aluminum hydroxide gel. In children too small to swallow the capsule it may be given in pear or peach juice or karo, followed by one or two teaspoons of aluminum hydroxide gel. It is not stable in solution for more than twenty-four hours. I instruct the nurses or patient to empty the capsule just before time to give it.

In addition to Rocky Mountain spotted fever, Q fever, Rickettsial pox, lymphogranuloma venereum, primary atypical pneumonia, brucellosis, some urinary infections, and tularemia, aureomycin and chloromycetin have a bacteriostatic effect on certain other gram negative and gram positive organisms, but in general less than penicillin or possibly less than streptomycin or the sulfa drugs. However, there are a large number of patients who are sensitive to the above drugs or have organisms which have become resistant to them, and

aureomycin might be very effective in their treatment.

Aureomycin is effective against some of the same organisms as streptomycin but has the advantage of less toxicity and that it can be taken by mouth.

In our zeal to treat and overcome specific infections with this or any other of the antibiotics we should not overlook fluid intake, the electrolyte balance, aspirin, enema, back rubs and good nursing care, as many who practiced even before the days of sulfa saw many patients removed from rather severe infections without specific treatment.

Since being requested six weeks ago to discuss this paper I have treated twenty-three children with aureomycin. Three were with acute respiratory infections from which there was little or no response from aureomycin, but responded well to triple sulfa or penicillin. Of the other twenty they were chronic or subacute infections which had responded poorly to penicillin and sulfa, and five of the group had already been given streptomycin. Twelve, or over half, of this group showed from slight to much improvement. In this group was a case of nephrosis and subacute glomerulin nephritis with chronic pharyngitis, two cases of atypical pneumonia, bronchitis, bronchiectasis, laryngitis, with post-nasal drainage.

I had no serious reactions and feel that patients with pyogenic infections who are sensitive to or have failed to respond to penicillin or sulfa may be tried on aureomycin.

MATAS AWARD AND LECTURE

On January 17 the administrators and the faculty of the Tulane University of Louisiana, New Orleans, sponsored the fifth presentation of the Matas Award in Vascular Surgery, created by the establishment of the Violet Hart fund in the university. The presentation was made to Dr. Alfred Blalock, of Baltimore, Maryland.

The third annual Rudolph Matas Lecture was given Friday, January 27, at 8 p.m., at the Hutchinson Memorial Auditorium in New Orleans, by Cecil J. Watson, M.D., professor of medicine, University of Minnesota. Dr. Watson's subject was "Modern Concepts in Liver Function and Their Alteration in Disease."

This annual lectureship honoring Dr. Rudolph Matas, was established in 1948, and is sponsored by Nu Sigma Nu Fraternity, Beta Iota Chapter.

Carcinoma of the Rectum*

(Editorial Symposium)

CHARLES W. MAYO, M.D.,
Division of Surgery, Mayo Clinic,
Rochester, Minnesota

○ F THE entire colon and rectum, one third of the carcinomas will be found in the rectum. If the anus, rectum and rectosigmoid are considered together, half of the carcinomas will be found in these regions. In other words, these growths exist within reach of the examining finger and proctoscope. Almost three fourths of the malignant lesions of the large bowel and rectum are within reach of the sigmoidoscope.

One out of ten persons more than 40 years of age, who has had no symptoms of intestinal trouble but who has been examined carefully by use of the sigmoidoscope, has been found to have a polyp or polyps, sessile or pedunculated, sufficient to justify fulgeration. Not all polyps in the colon are malignant, by any means, but all should be considered potentially dangerous from this standpoint.

When one suspects, from the presenting signs and symptoms, that a malignant growth may be present, sigmoidoscopic examination should precede the consideration of barium enema and roentgenologic study. Under such circumstances, barium never should be given by mouth because of the danger of its causing obstruction and because it certainly would prolong the period of colonic cleansing, should pathologic change be found to justify it.

* Submitted by Dr. Willard H. Parsons under auspices of the educational committee of the Mississippi Cancer Society.

If a diagnosis of carcinoma of the lower portion of the sigmoid, the rectosigmoid or the rectum is made by a combination of examinations with the finger, sigmoidoscope and by biopsy, only rarely should further roentgenologic examination of the colon be carried out. No time should be lost in arranging for proper preparation of the patient for operation. Exploration of the abdomen and colon at the time of operation, and later roentgenologic study at the time of check-up examination, is preferable to risking complications that may occur and to losing the time necessary to remove barium from a diseased bowel.

The type of operation varies for each case of carcinoma of the lower portion of the bowel. The size, situation, fixation and extension of the growth, the question of obesity, the shape of the pelvis, and the general condition and age of the patient are among the more important factors that will control what can be done. It is tragic to sacrifice the anus when it can be preserved and it is equally tragic to preserve it when it should be sacrificed.

One should be quick to suspect malignant disease in the lower portion of the colon and rectum, should be careful and accurate in the examination, and when a malignant lesion is found, one should be appreciative of the factor of time in the interest of the patient. The condition should be considered operable until it has been proved absolutely to be otherwise.

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The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

FROM OUR PRESIDENT

I sincerely hope that our State Association is well represented at the June meeting of the A.M.A. in San Francisco. The Murphree-Ford Tours are planning a special trip for the doctors and their wives, leaving Jackson, June 22, going via New Orleans, La., San Antonio, Texas, El Paso, Texas, Juarez, Mexico, Los Angeles, and Hollywood, to San Francisco. Returning via Portland, Columbia River drive, Seattle, Washington, steamer trip to Vancouver, B. C., across Canadian Rockies to Lake Louise and Banff Springs to Chicago, will arrive in Jackson on July 6.

In addition to attending the A.M.A. this trip will be almost equivalent to a postgraduate course on account of the ideas and discussions that will be exchanged among our colleagues, to say nothing of the good fellowship that will abound. If you are interested and

have not received data concerning the trip, write to Murphree-Ford Tours, Jackson, Mississippi.

The Arkansas Medical School at Little Rock under the able deanship of Dr. W. C. Langston, is taking a new step in medical education. Recently the dean called in three practitioners from Arkansas and Mississippi to discuss medical practice and human problems out in the small town and rural communities. The visitors were banqueted out at the club where an open log fire radiated light and warmth charged with personal friendship and Southern hospitality. After the banquet at the administration building a fine audience of faculty members assembled. Dean Langston gave the introduction stating the purpose of the meeting and turned the rest of the procedure over to Dr. L. H. McDaniel of Tyronza as chairman. "Dr. Mack" took off with some very practical thought, reinforcing it with inspiring oratory. Dr. Joe Verser of Harrisburg made many practical points in teaching the medical student of today to understand what is needed in the rural communities.

The editor was pleased to have a part on the program. We believe this marks the beginning of a new era in medicine, a search for what it will take to deliver the best in medicine to all the people at a cost at which it may be utilized. The Arkansas School is making a start in correlating practical teaching for practitioners and the broad field of service the doctor has before him in our human economies. Less than half of our people have pathological and infectious diseases. Man has a mental and a spiritual side. The broadly educated practitioner has the greatest challenge of any man in any profession. Every phase of human interest must be considered by the doctor of the future, especially the general practitioner.

After the main meeting and round table, hot coffee and doughnuts graced a fine hour of fellowship. We feel sure that the Medical School of Arkansas is on the way up. Arkansas is said to have more natural resources, to be more nearly self-sustaining than any other state in the union. In addition to this it has an automatic ever-ready hot water bath, for all its estimable medicinal value, has also served to wash many a man clean. The active and affable governor of Arkansas, Gov. McMath, also is wide-awake and going forward. He is behind the medical school. Our eyes are on the forward march of Arkansas in every way.

Dr. J. S. Sanders of Leland received his Fifty-Year certificate and his pin on February 3. The meeting was held at his home Presbyterian church.

It is a great thing to do service to this noble band of men who have served so nobly for fifty years through trying times and under hospital and doctor shortages. The deeds of nobler men have not been recorded. It is a pleasure and an honor to have a part paying them deserved tribute.

Mississippi can have the best medical school for practitioners and the best training center for public health officers in this nation. We have waited too long now. How we do need medical vision and courage in the heart and soul of our leaders! No man can give one single sound excuse for not having a four-year school.

Just because a baby is in the room with its mother is no reason why it should not be counted on a hospital average. It is a human being, it has to have nursing service, and it is just as much a baby in the room with its mother as it is in a ward with several other babies, and it's a lot better off, according to our notion. A foolish hospital rule like this should be operated on by the legislature while it is in session.

The annual meeting of Mid-South Postgraduate Medical Assembly is now at hand February 14-17. This association has a fine program lined up, outstanding and distinct in its purpose.

At the Mid-South all come together to hear each paper, with a broadening influence on the entire group. In four days this association gives a summary of the latest and best known medicine and surgery, presented by the best men in the nation. Memphis has a great medical school and the city has a fine medical atmosphere. The doctors of Memphis are very friendly and most cordial. The Peabody Hotel affords the very best accommodations for a medical assembly.

The doctors of the Mid-South are the very best to be found anywhere. It will do you good to mix and mingle with them. Don't miss the Mid-South. Be on hand from the beginning to the end. Your patients will profit by your attending the meeting.

The Academy of General Practice will meet in St. Louis February 20-23. This meeting reached big proportions last year in St. Louis. It was one of the very best we have ever attended. Apparently given a great mission, it has really enlisted the rank and file in general medicine and general surgery. It is reaching out after the men who are doing the major part of everyday practice. This association is wielding a great influence toward defeating socialized medicine. It is raising the standard of efficiency of the general man, by requiring him to take a certain amount of postgraduate work each year to hold his membership. It will help to show the way back from overspecialization to better trained men in general practice and will help to define the bounds of general practice. There is no better city in the United States to hold a meeting than St. Louis. You will be greatly benefited by attending this meeting.

The Southeastern Surgical Congress met last year in our own state, down at Biloxi. It put on a fine meeting. This congress is enlisting the surgeons who are really doing the bulk of the work in the South. It has its home in Atlanta. Dr. B. T. Beasley is the very able secretary-manager of the Congress. This year it is to hold its session in Washington, D. C., March 6-10.

It is later than we think for our four-year medical school. The two-year schools have their years numbered. We can no longer afford to be without a four-year school. No reason can be given for not having the four-year school. Every doctor in the state should assert himself to secure the appropriation at once. We need to get on the way with the school. Our four-year medical school will be to medical service for our people what an engine is to a car.

News and Comment

PAST PRESIDENTS' DINNER

President Hoyt Allen plans to banquet the past-presidents of the Mid-South at the Peabody on Wednesday night of the meeting. A most cordial man, he will be a most delightful host. The members of the Past-Presidents' Club will make Dr. Allen happy by attending. Don't fail him.

PRESIDENT

Dr. Hoyt R. Allen
Little Rock, Arkansas

Dr. Hoyt R. Allen, member of the faculty of the University of Arkansas School of Medicine, Little Rock, Arkansas, and widely known in his specialty of proctology, brings cordial greetings to physicians of the Mid-South territory and urges a record attendance at the sixty-first session of the Mid-South Postgraduate Medical Assembly:

"It is my pleasure and privilege to extend greetings to the doctors of our mid-South area and remind you of the superlative profit offered in the postgraduate sessions in Memphis February 14-17. The program this year promises to be extraordinarily good, and is planned to give the best in the various fields commanding the time and endeavor of medical men of this section.

"Add to the above the hospitality of the Peabody and other Memphis hotels, the warm-hearted welcome of the Memphis fraternity, and the handshake of friends you look forward to meeting again year after year, and you have the maximum of profit and satisfaction in store for you."

A MESSAGE TO DOCTORS' WIVES OF MISSISSIPPI

MRS. A. STREET, Auxiliary President

Our friends who have traveled in the British Isles recently, tell us of the sorry plight of people who are really ill in Britain, and quote British physicians as saying, "We are glad you Americans are doing something about it."

It is true that our government is well on the way toward the socialized state which includes socializing the medical profession. What are our people doing to combat it? Some effort is being made, but every earnest citizen, as well as every doctor and his wife, will need to be aroused if the tide is turned. Our Mississippi legislature has spoken many times against the tyrannical powers of the federal government and the un-American influence which is being felt in our country. Our doctors have set the example of an aggressive informative policy.

If, then, every doctor's wife would do her best to get the facts to our people, so much strength would be added to the profession, the intruders could be warded off. The people will have none of socialism or communism if they realize its true meaning and effect.

I should like to invite every doctor's wife to join our Woman's Auxiliary. If there is no organized auxiliary in your town, join one nearby or become a member-at-large. If we all work together, we can prevent a radical change in our form of government and destroy this threat to personal liberties in our country.

Let me urge doctors' wives to meet the challenge and join hands in working to preserve our constitutional government, the best, by far, in the world.

CANCER CLINICS

Cancer clinical sessions are being provided by the staff of the University of Tennessee School of Medicine under the sponsorship of the State Medical Association through its Subcommittee on Cancer Education, under the chairmanship of Dr. W. H. Parsons of Vicksburg.

The following teaching centers will provide for two sessions at weekly intervals, to begin at 2 p.m. Sessions will be held at Columbus on Feb. 1 and 8; Tupelo, March 2 and 9; Oxford, March 16 and 23; Clarksdale, March 30 and April 6; Grenada, April 12 and 19 and Greenwood, April 26 and May 3.

GARTLY-RAMSAY HOSPITAL CELEBRATES

On February 10, 1950, Gartly-Ramsay Hospital celebrated its fortieth anniversary. In October, 1909, George Gartly and R. G. Ramsay, having received their hospital training at the Battle Creek Sanatorium, Battle Creek, Michigan, acquired the building which they completely remodeled. By February of the following year they were ready for operation, and the first patient was admitted February 10, 1910.

The success of this venture is due in large part to the loyal support of the medical profession and the people of this territory, and the founders owe much to the late Col. J. W. Canada, their legal adviser until his death three years ago. The hospital was incorporated in 1911, and in 1912 an addition was made which increased the capacity to thirty beds. A new operating room and delivery room were added in 1922, and the new fireproof wing was built in 1927, bringing the bed capacity to 50. Physical therapy departments have been maintained from the beginning for both in- and out-patients, and they are operated according to the methods used at Battle Creek. Late in 1949 an automatic sprinkler system was installed by the Texas Automatic Sprinkler Company and has been approved by the Underwriters of the State of Tennessee and the Memphis Fire Department.

A training school for nurses was established shortly after the opening of the hospital and continued in operation for over thirty years. The medical staff was organized in 1928 with the late Dr. Bryce W. Fontaine as its first chief of staff, and Dr. Henry B. Gotten is the newly elected chief for 1950. The staff has always played an active part in the medical affairs of the institution and has proved a valuable asset to the organization.

For the past ten years the hospital has specialized in the care of psychiatric and medical patients, for which they are well equipped. There are x-ray and laboratory for diagnostic purposes, and electro-shock therapy and physio-therapy to aid in the treatment of these patients.

Dr. Gartly, who now lives in Orlando, Florida, has not been active in the hospital for a number of years and recently severed his connections entirely. The operation and management of the institution are handled by R. G. Ramsay, Sr., co-founder and president, and his son, R. G. Ramsey, Jr., vice-president and secretary.

CONGRESS OF CHEST PHYSICIANS

The First International Congress on Diseases of the Chest will be held at the Carlo Forlanini Institute, Rome, Italy, September 17-20, 1950. Physicians who are interested in attending the Congress should communicate at once with Dr. Chevalier L. Jackson, chairman of the Council on International Affairs, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

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Bilhuber-Knoll Corporation	Orange, New Jersey
Burroughs Wellcome & Co. (U.S.A.) Inc.	
	New York, N. Y.
Cameron Heartometer Company	Chicago, Ill.
Cameron Surgical Specialty Company	Chicago, Ill.
Carnation Company	Los Angeles, Calif.
G. W. Carnrick Company	Newark, N. J.
Ciba Pharmaceutical Products, Inc.	Summit, N. J.
DePuy Manufacturing Company	Warsaw, Ind.
The Dick X-Ray Company	Memphis, Tenn.
R. Yates Dillard & Company	Memphis, Tenn.
H. G. Fischer & Company	Franklin Park, Ill.
General Electric X-Ray Corporation	Memphis, Tenn.
Gerber Products Company	Fremont, Mich.
H. J. Heinz Company	Pittsburgh, Pa.
Hoffmann-LaRoche, Inc.	Nutley, New Jersey
Holland-Rantos Company, Inc.	New York, N. Y.
Kay Surgical, Inc.	Memphis, Tenn.
Kinney & Company	Columbus, Ind.
Lanteen Medical Laboratories, Inc.	Evanston, Ill.
Lederle Laboratories Division	
American Cyanamid Company	New York, N. Y.
Eli Lilly and Company	Indianapolis, Ind.
J. B. Lippincott Company	Philadelphia, Pa.
J. A. Majors Company	New Orleans, La.
Mead Johnson & Company	Evansville, Ind.
E. L. Mercere, Inc.	Memphis, Tenn.
The Wm. S. Merrell Company	Cincinnati, Ohio
Mid-South Oxygen Company	Memphis, Tenn.
Philip Morris & Co. Ltd., Inc.	New York, N. Y.
Parke, Davis & Company	Detroit, Mich.
Pet Milk Company	St. Louis, Mo.
A. H. Robins Company	Richmond, Virginia
Sandoz Pharmaceuticals	New York, N. Y.
Schering Corporation	Bloomfield, N. J.
Sealy Mattress Company	Memphis, Tenn.
Sharp & Dohme, Inc.	Philadelphia, Pa.
The Smith-Dorsey Company	Lincoln, Nebr.
Southern Surgical Supply Company	Memphis, Tenn.
E. R. Squibb & Sons	New York, N. Y.
Wm. T. Stover Co., Inc.	Little Rock, Ark.
Frederick Trout Co., Inc.	Mount Vernon, N. Y.
U. S. Vitamin Corporation	New York, N. Y.
The Upjohn Company	Kalamazoo, Mich.
White Laboratories, Inc.	Newark, N. J.
Winthrop-Stearns, Inc.	New York, N. Y.
Wyeth Incorporated	Philadelphia, Pa.
F. E. Young & Company	Chicago, Ill.
Eisele & Company	Nashville, Tenn.
Memphis Limb & Brace Company	Memphis, Tenn.
The National Drug Company	Philadelphia, Pa.
Ortho Pharmaceutical Corp.	Raritan, N. J.
Smith, Kline & French Laboratories	Philadelphia, Pa.
Union Hospital Supply Co.	Memphis, Tenn.

A.M.A. DUES

The House of Delegates of the American Medical Association at its meeting in Washington, D. C., December 6 to 8, 1949, adopted amendments to the By-Laws of the American Medical Association whereby Division One, Chapter II, Tenure of Membership, has been changed to read as follows:

Chapter II.—Tenure and Obligations of Membership; Dues

Section 1.—When the Secretary is officially informed that a member is not in good standing in his component society he shall remove the name of said member from the membership roll. A member shall hold his membership through the constituent association in the jurisdiction of which he practices. Should he remove his practice to another jurisdiction, he shall apply for membership through the constituent association in the jurisdiction to which he has moved his practice. Unless he has transferred his membership within six months after such change of practice, the secretary shall remove his name from the roster of members.

Section 2.—Annual dues, not to exceed \$25.00, may be prescribed for the ensuing calendar year in an amount recommended by the Board of Trustees and approved by the House of Delegates. Each active member shall pay said annual dues to his constituent association for transmittal to the Secretary of the American Medical Association.

An active member who is delinquent in the payment of such dues for one year shall forfeit his active membership in the American Medical Association if he fails to pay the delinquent dues within thirty days after notice of his delinquency has been mailed by the Secretary of the American Medical Association to his last known address.

Any former member who has forfeited his membership because of being delinquent in payment of dues may be reinstated on payment of his indebtedness.

CLINIC SESSIONS ON CANCER DIAGNOSIS

The Cancer Committee of the Mississippi State Medical Association will sponsor a series of seminars on "The Responsibility of the General Practitioner in the Early Diagnosis of Cancer" to be held early in the year. These seminars will be conducted by outstanding physicians in the field of cancer, and will cover diagnosis of cancer of the skin and oral cavity; breast, uterus and cervix; the rectum; and pathology.

Certificates of attendance will be awarded by the University of Tennessee and the Mississippi State Medical Association. All physicians in the state are invited to take advantage of the opportunity of attending these seminars.

Full details of the series are available at the Mississippi Division of the American Cancer Society, 501½ East Capitol Street, Jackson, Mississippi. Programs will be sent to all physicians in the state, prior to the meetings.

OPHTHALMOLOGY COURSE

A Continuation Course in Ophthalmology will be held March 13 through noon March 18, 1950, given by the Department of Ophthalmology of Tulane University and the Division of Graduate Medicine.

Guest lecturers will be: Dr. Daniel B. Kirby, New York, New York, professor emeritus of Ophthalmology New York University Medical School; Dr. Frank B. Walsh, Baltimore, Maryland, associate professor of Ophthalmology Johns Hopkins University and Wilmer Eye Institute; Dr. Robert J. Masters, Indianapolis, Indiana, professor of Ophthalmology, University of Indiana Medical School; Dr. Harold Falls, Ann Arbor Michigan, associate professor of Ophthalmology, University of Michigan Medical School; and Dr. Charles Sherard, distinguished lecturer in ophthalmology, Tulane University of Louisiana, professor emeritus of Experimental Biophysics, Graduate School, University of Minnesota (Mayo Clinic). Additional lectures will be given by resident faculty members of the Department of Ophthalmology, Tulane University.

ANNOUNCEMENTS

C. H. Porter, M.D., announces the opening of offices, 426 Physicians and Surgeons Building, Memphis, Tennessee. Practice limited to general surgery.

Dr. E. W. Eberling wishes to announce the opening of the Clinic for Children at Starkville, Mississippi. Complete diagnostic services for the practice of pediatrics.

Dr. William B. Patton, assistant professor neurosurgery, University of Alabama, announces the association of Dr. Donald B. Sweeney, formerly associate, division of neurosurgery, State University of Iowa Medical School, in the practice of neurosurgery, 2205 Highland Ave., Birmingham 5, Ala.; 515 Bell Building, Montgomery, Ala.; 506 Van-Antwerp Building, Mobile, Ala.

With the Fifty-Year Club

Dr. W. H. Scudder of Mayersville who is now in his eighty-ninth year, attended the last meeting of his local society, the Delta Medical Society, and is right on his tiptoes in interest. Not long ago he attended the last meeting of Sons of Confederate Veterans at Little Rock, Ark. He was the oldest son of a Confederate veteran at this meeting. Having been in practice now over sixty-two years, an outstanding man in the practice of medicine, and a wonderful citizen in his community, you will read with interest the following about Dr. Scudder:

Dr. Scudder was born in Wilkinson County, Miss., in September, 1861, near Woodville. He attended the private schools of the neighborhood as a small boy, and was later a pupil of the first public school established in the county of his birth in the early 1870's, in Reconstruction Days, a school term of only four months in the year.

As a very small child he heard the guns of the siege of Vicksburg, and vividly recalls seeing Confederate soldiers on the march. "My mother dressed me in little homespun slips much as were worn by small children of both sexes in those dark days. A passing soldier,

reminded of his own children at home, spoke to me as 'little gal.' That was most embarrassing, being called a 'gal', and I distinctly remember blushing to the roots of my hair!"

He remembers how the women, young boys, and the few faithful slaves who still stayed by the old Mistis, drove the livestock off into the swamps and canebrakes, and hid their home-cured bacon in sink holes in the woods when they heard the Yankees were coming.

At the age of sixteen William joined the Methodist church, at old Bethel campground and has served as steward and trustee of his church ever since.

His first experience away from home was as teacher of the one-room school at Rolling Fork in 1882, and of the one-teacher school at Anguilla in 1883. After finishing the term at Anguilla he joined the Engineer Corps of the Y.-M.V. Railroad. On the completion of this railroad through the Delta two years later, he decided to take up medicine as his chosen profession.

He entered Medical College at Louisville, Ky., in the fall of 1885, where he graduated two years later, winning the gold medal in the practice of medicine. But his first experience in the field of practice was in surgery, which circumstance he could not sidestep. He located

MID-SOUTH PAST-PRESIDENTS' CLUB



Seated around the banquet table at the 1949 Past-Presidents' dinner are: Left to right, Drs. Euclid Smith, Lawrence W. Long, L. H. McDaniel, W. H. Anderson, H. Fay Jones, V. B. Philpot, C. P. Loran. (guest), F. M. Acree, Jere Crook, A. G. Hudson, Allen Cox, P. H. Lutterloh, H. King Wade, Hoyt Allen, and C. R. Crutchfield.

at Mayersville in April 1887, where he practiced continuously for sixty-two years.

Issaquena, called the "wet end of the Delta", in these days, had only narrow strips of the highest land along the banks of the bayous and along the river considered worth cultivating. The levees were low and inadequate. Breaks and general overflows were frequent. The levees were six to eight feet high when he settled here, now they are sixteen to twenty feet high, and still being built higher.

The worst types of malaria were prevalent in those early days, the dreaded malarial hematuria being common. The people were at the mercy of the mosquito, and did not know it, in this era before the invention of screen wire, which since has proved the salvation of the Delta people.

As county health officer of Issaquena for twenty-five years Dr. Scudder was instrumental in ridding his county of malaria. Now a case of it is rarely seen.

At the time he began to practice medicine there were no hospitals, except a charity hospital occasionally in the cities. Every doctor had to take care of every case that came to him. Many times his wits were taxed to the utmost. He had to rely on his own ingenuity and inventive genius. The following case is taken at random:

"An old negro man went home Saturday night drunk. His woman bolted the door on him and would not let him in. After wrangling a while, she stuck a single barrel shotgun through an augur hole and fired. The whole load, with shot, nails, paper and rag wadding shattered the upper arm, tearing a four-inch section of bone away. Removing the shattered pieces of bone, wadding, pieces of dirty shirt, battered lead and nails, the doctor cleansed the wound with iodine water, and daily flushed it with iodine water. After several weeks the wound was clean, and quit draining, the two ends of the bone were brought together, a fixed dressing was applied with liquid glass, a good shoulder cap applied to support the lower arm, and the arm securely bandaged to the side. In due time the dressings were taken off, revealing the bones firmly united, and the outer wound perfectly healed over. In several weeks more he was plowing, chopping wood, and beating his woman as usual. But he looked odd, and uncouth, with one elbow half way up to his shoulder."

But the doctor considers the finest and most artistic piece of surgery he ever did was

the repairing of the leg of his wife's canary bird.

A bird's thigh is cone shaped, large at the top and very small at the knee. There was a compound fracture just above the knee. The problem was to fix a dressing which would not slip down. This put his inventive ingenuity to task. He had no recourse to veterinary surgery, though he is a duly licensed veterinarian, as well as a licensed civil engineer. Undismayed, he set to work and made a well-fitting cone from a piece of kitchen oil cloth table cover. He next wrapped the dangling leg, still bleeding, with gauze saturated with Tichenor's Antiseptic, and fitted it in the cone. Now came the difficult problem—to fix the dressing so it would not slip down. He knew from his general knowledge of surgery that the nerves, bloodvessels and tendons of a limb are placed on the under side, the safest place. He accordingly threaded the smallest cambric needle he could find, stuck the needle through the lower end of the cone, then through the bird's leg just below the knee, hugging the bone closely, and then through the other side of the cone. He then tied the threads together on the front side of the leg, thus avoiding binding the important vessels beneath. This dressing held perfectly. It was removed in about four weeks to disclose a perfectly healed bone, and soon the canary was dispensing song as usual.

In 1890 Dr. Scudder was appointed U. S. Examining Surgeon for Civil War veterans applying for pensions. He served in this capacity for several years, until all the veterans had been examined.

He was the medical member of the local draft board in 1917-19, and examined all the soldiers sent to World War I from Issaquena county. He was again appointed as a member of our local draft board for World War II. In 1948, when we came so near having World War III he again was called on by the government to serve on the county draft board for the third time and agreed. He comes from a long line of warriors. He is the oldest member of Mississippi Division, Sons Confederate Veterans, and is surgeon general of the old Confederate Veterans organization.

He is the last living charter member of the Delta Medical Society, organized in 1898. He is also oldest member of the Fifty-Year Club of the Mississippi State Medical Association. In political life he served his county as supervisor for eight years.

DEATHS

DR. EDWIN M. TOPP, JR.

Dr. Edwin M. Topp, Jr., 27-year-old physician and a member of a prominent Lee County family, was found dead in his car on Highway 78 a mile and a half south of Holly Springs January 1.

Dr. Topp's body was found by a Negro while Mississippi highway patrolmen were searching for him at the request of business associates and friends at Como, where Dr. Topp and Dr. Charles Hickman operated the Como Clinic.

He had been dead about twelve hours, indicating the fatal shot was fired a few hours after he left the clinic at Como. State police listed the death as suicide, but did not offer any reason for the act.

Services were held at the First Presbyterian Church in Tupelo. Burial was in Glenwood Cemetery.

Dr. Topp was born in Tupelo. He attended the University of Mississippi, received his medical degree at Tulane University, worked as an interne in Philadelphia. He was in the Army during World War II. He was a member of the Presbyterian church.

He leaves his parents, Dr. and Mrs. Topp of Tupelo and two sisters, Mrs. James Riley of Tupelo and Mrs. William Blakey of Guntersville, Ala.

DR. T. E. JARVIS

Funeral services were held December 27 for Dr. Thomas Edgar Jarvis, who died at the Baptist Hospital in Jackson on Christmas.

Born in 1883 at Preston in Kemper County, Dr. Jarvis was a prominent practicing physician for 32 years. He suffered a stroke a few years ago and had been confined to his home since then. Mrs. Jarvis suffered a broken limb and had to be taken to the hospital recently. Dr. Jarvis was moved to the home of his son, Hobart Jarvis in Jackson. He had a severe stroke there and never rallied.

He was a member of the Baptist church and the Masonic lodge.

He leaves his widow, Mrs. Oliver Hancock Jarvis of Newton, a daughter, Mrs. H. V. Greer, Jr., Anguilla, and his son, Hobart Jarvis of Jackson; three sisters, Mrs. T. L. Robinson of Noxapater, Mrs. W. B. Smith, of Hattiesburg, Mrs. D. C. Vandevender of Gholson; a brother, O. H. Jarvis, of Gulfport; two grandsons and a number of other relatives.

DR. D. D. BAUGH

Dr. Douglas D. Baugh, Columbus physician who was a former staff member at the Mississippi State Hospital at Whitfield, died at Jefferson hospital in Birmingham, Ala., at 8 p.m. December 17. He was 48 years old.

Dr. Baugh, a brother-in-law of Hamp Jones of Jackson, entered the hospital after suffering a heart attack December 10.

A native of Polkville, he was graduated from the University of Mississippi School of Medicine and received his medical degree from the University of Pennsylvania in 1929. He studied in the graduate schools of Tulane and Emory universities.

Dr. Baugh was a fellow in the American College of Physicians, and a member of the American Medical Association, the Mississippi Medical Association, the Lowndes County Medical Society, and the Northeast Mississippi Medical Society.

Survivors include his wife, Mrs. Mary Frances Jones Baugh; three children, Marjorie, Peggy and Ann Douglas, all of Columbus; a sister, Mrs. W. W. Martin of Puckett; and a brother, Howard Baugh of Refugio, Texas.

DR. EDWIN MABRY

Dr. Edwin L. Mabry, 71-year-old physician of Teoc, died suddenly from a heart attack on November 30, 1949.

The body was taken to Senatobia where services were held at 3:30 o'clock at the Baptist Church conducted by Dr. H. L. Martin. Burial was in Senatobia cemetery.

Dr. Mabry had practiced medicine in Teoc for the past 36 years, making his home with the J. T. Long family. He was an honor graduate of the Tennessee School of Medicine. He was a Mason and a member of the Baptist church.

He is survived by a sister, Mrs. Ralph Newell of Shelbyville, Ill., and a brother, Tom O. Mabry, Ripley.

Pallbearers were J. P. McCain, S. L. Bell, Sid Taylor, Irving Arnold, Rosvel Long and C. W. Brock.

DR. W. H. WILLIAMS

Dr. Wendell Holmes Williams, 65, prominent north Mississippi Physician, died December 28 in a Memphis, Tenn., hospital.

Dr. Williams had been in poor health for the last four years, his condition becoming more serious in October of last year.

A native of Senatobia, he was the son of the late Henry Williams and Lelia Mae Burch Williams. He attended Mississippi College at Clinton and was a graduate of the University of Tennessee Medical School.

Dr. Williams had practiced medicine in Tunica County for 30 years, was a member of the state and American medical associations and a 32nd Degree Mason. He served as a first lieutenant in World War I.

DR. FRANK SPALDING

Services for Dr. Frank C. Spalding, widely known West Point physician who died of a heart attack December 16 while at work in his office, were held at his residence.

The prominent doctor, who had practiced in Clay County for 33 years, was found unconscious in his office by a patient. He was 72.

The next day would have been his forty-seventh wedding anniversary of his marriage to the former Miss Sara Jordan. Born in Clay County, Dr. Spalding was the son of E. S. Spalding, onetime sheriff and treasurer here. He was graduated from the University of Tennessee College of Medicine in 1901. He first practiced at Malvina, Miss.

Before returning to his home town in 1916, Dr. Spalding practiced in Benoit, Miss., Crawford, Miss., and Meridian, Miss. He was an elder in the First Christian Church of West Point.

He leaves his wife and a daughter, Mrs. T. J. Tubb of West Point.

DR. E. L. RAWLES

Dr. E. L. Rawles, a Coahoma County resident for the past 32 years, died at Sherard, December 31. He was 78 years old.

Dr. Rawles came to Clarksdale to practice medicine in 1917. He leaves his widow, Mrs. Mallie Sherard Rawles, and one daughter, Mrs. Ralph Baltzer, both of Clarksdale.

A graduate of Memphis Hospital Medical College, Memphis, Tenn., he spent his entire professional life in Mississippi.

Interpreting Medical Literature

STAFF OF REVIEW

Dermatology—James G. Thompson, Jackson
Otolaryngology—Charles R. Hume
Ophthalmology—Edley Jones, Vicksburg
Obstetrics and Gynecology—J. F. Lucas, Greenwood.
Orthopedics—Thomas H. Blake, Jackson.
Public Health—Felix J. Underwood, Jackson.
Pediatrics—Harvey F. Garrison, Jackson.
Radiology and Roentgenology—Karl O. Stin-gily, Meridian.
Pathology—R. M. Moore, Vicksburg, Miss
Surgery—W. H. Parsons, Vicksburg.
Urology—Temple Ainsworth, Jackson.

PEDIATRICS

LEUKEMIA IN CHILDHOOD. Preliminary Report of Response to Aminopterin, Irving J. Wolman, Paul Eglick, Benjamin Dickstein and John Githens, The Children's Hospital of Philadelphia and University of Pennsylvania, Philadelphia, Pa., *Pennsylvania M. J.* 52:474-81, February, 1949.

"The discovery of the inhibitory effect of 4-aminopteroyl glutamic acid (aminopterin) and related folic acid analogues upon childhood leukemia by Farber and associates makes it necessary to have a clear conception of the natural history of leukemia if one is to appraise intelligently the possible benefits of treatment. A review is therefore presented of experiences with 67 cases of childhood leukemia, which parallel those described by other authors. Of the 67 cases, 22 seemed to be myelocytic; 41, lymphocytic; 1, monocytic; 2, undifferentiated; and 1, unidentified. The onset of symptoms was more frequent in the first five years, with the peak being in the 2 to 4 year group. There were 37 boys and 30 girls, in contrast to the more customary ratio of 2:1. All except 2 of the children were white. Pallor, enlarged lymph nodes, enlarged liver spleen, fever, malaise, hemorrhages and acute infection at the time of recognition, were the most common clinical features. Sixteen (28 per cent) exhibited hemorrhagic phenomena of more severe degree than simple petechiae. Roentgenographic examinations of the long bones were carried out in 52; 50 per cent of these had positive roentgen changes. Transverse zones of diminished density at the grow-

ing ends of long bones were the most frequent bone changes. The leukocyte counts ranged from a low of 300 to a high of 680,000. In 30, or 45 per cent, the maximum detected count was below 20,000; in 13 between 20,000 and 40,000; in 24, above 40,000. No correlation was found between maximum detected white cell count and age or between the period of survival following onset of symptoms and the height of the count. The absolute number of immature and abnormal forms tended to increase as the disease progressed. The prognosis for length of life seemed poorer when early counts were high in abnormal forms. At the initial examinations, the percentage of leukocytes which were immature or clearly abnormal ranged from below 1 per cent to 99 per cent. With 2 patients, no leukemic cells were found on first examination. Nearly all the cases exhibited some degree of anemia and about 10 per cent were severely anemic (red cell count below 1,000,000) at the time of first observation. Bone marrow aspirations (single or repeated) were deemed satisfactory in 36 cases; 32 of these had primitive or abnormal forms characteristic of leukemia; in 2, the marrow was aplastic; in 2 others, there were no leukemic cells in early examinations.

"Of 54 cases, 6 lived less than one month after onset of symptoms and only 2 survived more than eight months. Forty-two patients failed to exhibit any appreciable response to transfusion, whereas 13 had some benefit. Of 8 children treated with aminopterin for more than a few days, the majority exhibited good remissions, at least for a time. This drug has proved far superior to blood transfusions, urethane and other methods employed in the past for the alleviation of leukemia in childhood. Generally speaking, within two weeks after the first dose the marrow showed re-appearance of megakaryocytes, a return of erythropoiesis (in some to a hyperplastic degree) and a marked diminution in mitotic activity of the white cells. There was also subsidence of the enlarged liver, spleen and lymph nodes, rise in hemoglobin level and platelet count and reversion of peripheral blood towards normal. The dosage recommended is 0.5 to 1.0 mg. per day, intramuscularly, and the child is preferably hospitalized at first. Adequate dosage for good maintenance has varied considerably. Success in treatment on

individualizing the dosage. Ulceration of the lips, buccal mucosa of tongue have been the first signs of intoxication and occurred in all but 1 patient. Hemorrhage from the nose and gastrointestinal tract has occurred in 5 patients under treatment. It is too early to make long-term predictions as to the outcome with aminopterin."

COMMENT: At the present writing, there is no disease known to the medical profession for which there is less effective treatment than that of acute leukemia. Aminopterin is known to benefit a few of them for a short length

of time, but I regret to say that our experience is that all of them go the same route and none of them get well. There is quite a lot of research going on all of the time in a very painstaking effort to discover some effective treatment for leukemia, and it is to be hoped that it will be found in the near future, but if our President, together with his socialistically-minded cohorts in Washington, is successful in saddling socialized medicine on us, probably the progressive trend will be stopped in all lines and we will doubtless be set back in our progress in medical treatment for many years.

State Board of Health

Felix J. Underwood, M.D.

THE PROBLEM OF ALCOHOLISM

The use of alcohol by man has persisted through the ages and is a tremendous economic, social, medical and public health problem. Legislative efforts at its eradication have been futile as have most other measures to date. Of the fifty million users of alcoholic beverages in this country, three million are likely to be excessive drinkers, and about 750,000 become chronic alcoholics. In other words, of 1,000 users, 60 become excessive and compulsive drinkers without chronic alcoholism and of these, 15 become chronic alcoholics with or without compulsive drinking—an incidence of 6 per cent. This 6 per cent constitutes one of the most serious problems of society today, and more particularly it is a challenge to every member of society to try to do something about it. The medical and public health professions have a real responsibility in any program designed to help rehabilitate the alcoholic to a useful place in society and to provide leadership for a carefully planned, broad and continuous public educational program as its first line of defense in prevention. According to Dr. E. M. Jellinek, Director, School of Alcohol Studies, Yale University, "By all standards of present day knowledge alcoholism is a disease or rather a disease symptom, and the alcoholic deserves to be the object of public health endeavor."

In 1938 the Mississippi Legislature made provision for the employment of an individual

to supervise the teaching of the effects of alcohol, narcotics and all other habit-forming drugs in all grades of the public schools of Mississippi. Miss Vasti Ishee, Supervisor of Narcotics Education, of the State Department of Education, who has had special training at the Yale University School of Alcohol Studies, is doing a very fine job in this capacity but she needs the full support of every community to achieve the fullest measure of success from her efforts. There must be a better informed citizenship whose knowledge is based upon current scientific findings of the last few years. All the facts about alcoholism are not yet known, but intensive research studies are constantly going on, and much good can be accomplished by applying some of the facts now at hand. It is to be deplored that public opinion toward alcoholism today is about where it was toward insanity 100 years ago. According to Joseph Hirsh, an able health educator, "For hundreds of years the mentally ill were considered social pariahs. Thought to be bewitched and bedeviled, they were burned at the stake, stoned out of their communities, or imprisoned in jails. Even within our time, they have been placed in irons and dungeons in the primitive medical equivalents of jails called insane asylums. It was only when the light of scientific medicine and informed humanity had been turned on mental illness, that we were able to take the first step toward intelligent medical and social action."

Great strides have been made recently on the once almost unmentionable problems of venereal diseases, tuberculosis, and cancer. Real progress started only after people began to deal with these illnesses honestly and forthrightly. "Alcoholism", states Miss Ishee, "is an illness, being characterized by emotional and social maladjustment and by compulsive dependence on alcohol. It is emergent from two sets of factors: one the maladjusted personality, two, the depressant functions of alcohol; neither of these factors can alone result in alcoholism. Psychologically, the alcoholic generally exhibits emotional immaturity and extreme egocentricity; he does not always exhibit (in fact he often hides) the inward pain from which he suffers. The plight of the alcoholic is misery, insecurity, and chronic anxiety. Socially, the alcoholic is usually undersocialized; he does not participate in the usual family, friendship, neighborhood, or other social groups; he does not utilize the available opportunities of his community. He is sick, physically, psychologically, and socially. It is therefore essential that people become aware of the effects of alcohol on the security, the productivity, and the stability of the community—which can be measured by many factors. The accident rates of alcoholics in industries and homes are abnormally high. Their absenteeism, turnover, and unemployment are above the average. Their marriage rate is low, their divorce rate is high. Private agencies alone cannot be expected to cope with a problem which is as numerically large and cross-sectional as alcoholism. Within the past several years many states and several cities have taken steps to meet these problems squarely." The California Medical Association through its Special Committee on Studies on Alcoholism has just published an excellent report¹ covering aspects of the problem with recommendations as to what might be done by the physician to help bring about some solution. This report is very revealing and should be very helpful to the medical profession.

In Mississippi there was organized in the fall of 1948 a Jackson Committee for Education on Alcoholism, affiliated with the National Committee for Education on Alcoholism. Neither "wet" nor "dry", composed of physicians, public health workers, ministers, judges, teachers, and many interested laymen, the Committee has been directing its efforts toward acquainting the general public with these three facts: 1. Alcoholism is an illness.

2. The alcoholic is a sick person, one who can be helped and is worth helping. 3. Alcoholism is a public health problem and a public responsibility.

In January, this year, the Carnegie Foundation made available a grant of \$1,000 to determine the incidence of alcoholism in Jackson and to estimate the economic cost. A planning committee of the Jackson Committee for Education on Alcoholism is working in cooperation with Millsaps College, departments of Sociology, Chemistry, Economics, and Religion. Four members of the planning committee have had training at the Yale School of Alcoholic Studies. The survey will be useful in determining the strategic points where the problem of alcoholism should be attacked, the extent of the need for therapeutic facilities and other things. It is scheduled to be completed by June 15, 1950.

Dr. Robert Straus, Assistant Professor of Sociology, Section on Alcohol Studies, Yale University, came to Jackson on January 16 and spent several days in helping to get the survey started on a sound basis. He addressed a wide audience of the general public, following which there was spirited discussion and intelligent answering of questions asked. Excerpts of Dr. Straus's remarks are reproduced herewith for the benefit of the many physicians who are interested in this problem:

"The Section on Alcohol Studies of the Laboratory of Applied Physiology at Yale University, more popularly known as the Yale Plan on Alcoholism, initiated work about 15 years ago under the direction of Dr. Howard W. Haggard. It was early realized that this was a problem which could not be solved by the test tube alone and involved not only physiology but health, medicine, the social sciences of sociology, psychology, anthropology, economics, law, religion, and education. Therefore, capable men from these related disciplines were brought into the program to make possible the broad research engaged in to date on therapy, rehabilitation, prevention and education. From the long range point of view, the primary aim of the Yale Plan on Alcoholism is prevention.

"It is recognized that the use of alcoholic beverages is a social custom in this country and that not all drinkers become problem drinkers. Those who do are usually unstable, neurotic individuals; and efforts are being made at present to determine physiological differences in the alcoholic as compared to the

non-alcoholic—what makes a person more prone to alcoholism than others. In the social sciences, we are studying, in addition to abnormal drinking behavior, the drinking habits of various segments of the population—nationality groups, occupational groups, age groups. One long range study involves a survey of the drinking patterns among college students in the United States in which eighty colleges and fifty thousand individuals are expected to be covered. Through this study it is hoped to gain better insight into the various pressures for and against drinking and to be able to identify the sanctions or pressures which are associated with early drinking—especially with incipient heavy drinking in young people, provide them with an approach to the problem that will appeal to their intelligence and good judgment, show the effects of excessive drinking in such a way that young people will not react as they have done so often in the past—rejecting the principles of moderation because they have been associated with dogma and with certain inconsistencies between the behavior which was suggested and that which they observed in society around them. We feel that we will be able to afford young people an opportunity to exercise their own judgment in a way, which in the long run will be very effective toward the prevention of alcoholism . . . We are very conscious of the fact that alcohol in American society is in part a concomitant of the complexities of that society and that sound mental hygiene can be a very important factor in prevention of alcoholism. It would be most helpful if each college had someone on its staff—either in a mental hygiene department in its health department, or a faculty member who has good rapport with the students—a counsellor with a broad knowledge of the custom of drinking and an understanding of the underlying factors of alcoholism—who could be sought out freely by young people with emotional conflicts and anxieties.

"Of the approximately 4 million excessive drinkers in the country, the basic problem of about 20 per cent of them is not alcohol at all but is a physiological or psychiatric disorder. To try to treat these by working on their drinking problem will not be effective. They need medical and psychiatric treatment going far beyond the problem of alcoholism. There is another group which may be called the social-misfit drinker. These drink excessively because they want to drink excessive-

ly; they are bored with life and usually have fairly low intelligence. They are people who are not dependent upon alcohol but who like it, or think they like it, and use it for the escape which it affords them from the realities of an existence which is not pleasant to them. Then, there is that group of 2 or 2½ million of true inebriates, which we call alcoholics. These people are characterized by a compulsion to drink; they feel that they have to have alcohol in order to go on facing life. They feel that it is essential to them. Once they start drinking they rarely stop until they are completely inebriated. They are the people who cannot take just one drink. This is an important phase of any educational program for them.

"These four million people represent a problem for the rest of us. They are ill and in need of attention.

"The attempts to associate the subject of drinking with the subject of alcoholism have been in some respects quite disastrous, since the use of alcoholic beverages is so firmly entrenched as a custom in this country. As a result legislation which is contrary to the mores usually cannot be enforced.

"Social changes come about slowly and the important thing at the moment is to try to do something for these 4 million sick people and formulate a program aimed at prevention for the future. Fortunately, some progress is being made. Ten years ago the subject of alcoholism was almost taboo. It wasn't talked about; it didn't appear in the newspapers. The drunk was commonly considered a weakling or just a plain 'no-gooder.' Advice to him was often, "Get onto yourself, fellow; you mustn't drink that much; get a-hold of yourself. Why don't you do like brother John over there; he doesn't get into that sort of difficulty." The movement which is taking place today in the field of alcoholism is somewhat comparable to that which has taken in the last century, with regard to mental disease, tuberculosis, cancer and the venereal diseases. It is being brought out of the realm of taboo and moralization and being put before the public and the professions as a public health problem, a social problem, about which something can and should be done."

REFERENCE

1. California Med. Assn. - Studies by a Special committee of the Assn. on Alcoholism. *California Medicine* 72: 4056, January, 1950.

Lymphadenopathy in Children*

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AS SOON AS there is an acute infection such as tonsillitis, the regional lymph glands try to block it off. During this process, minor or major damage is done to these lymphatics. Clinically, this is expressed by inflammation causing swelling and tenderness of these organs and if the protective powers of their cells are insufficient, by the formation of a lymph gland abscess. The lymph gland involvement remains regional as long as the infection is walled off by the chain of lymphnodes. This can be seen in the cervical glands after tonsillitis, in the hilar glands following cases of pneumonia, or whooping cough, and in the mesenteric glands after bacterial infections of the intestines. Swelling of the axillary or inguinal glands follows infections of their respective regions, such as skin lacerations, infected wounds, boils, and so on. Generalized lymphadenopathy appears as soon as the attacking germs overwhelm the protecting cells. Therefore, this generalization in infection should be considered as a definite proof of insufficient power on the part of the fighting lymphatics. This is true in septicemia of any bacterial origin, as well as in virus infections.

Only recently it was recognized that lymph glands are unable to blockade the body against virus infections; there is no regional lymph gland swelling in virus infection and no blocking off of the virus at a spot near the point of entrance. If the lymph glands are involved at all there is generalized lymph gland swelling.

In chronic infections where the process of spreading is a prolonged one, generalized lymphadenopathy is not necessarily found, even if there are multiple pathological foci in the body. For example, in a tuberculous process that spreads by way of the lymphatics, one single cervical gland region may be found affected for a long time as the only clinical sign of a generalized infection. In Hodgkin's disease, again, one single lymph node may be found as the only pathological sign for a prolonged period of time. In the leukemias and

in tumors, there is no such general rule. One single lymphatic region may be involved for some time, or generalized lymphadenopathy is already found at the beginning or very soon after the onset of the condition, and this latter is more frequent. Much less known is a second essential function of the lymphatics: the formation of antibodies. As early as 1898, attention was directed toward this process, but crucial tests on the theory of specific antibody formation were reported only in 1942 by Ehrlich and Harris. They could show, in exact animal experiments, that the antibody titer of a specially treated lymphnode exceeded by as much as a hundred fold that of the blood serum. These authors concluded that hemolysins and agglutinins are formed within the lymph glands.

The topic of lymphadenopathy in children covers a very wide range. Probably for that reason there has been no single monograph on it. The limited time that is at my disposal for this talk will therefore permit me only to give you an outline of these pathological conditions, and I believe that this, perhaps, can best be fulfilled by giving you some typical case histories.

An eight-and-one-half-year-old boy was sent home from school because he was very tired, showing peeling on his hands and a lump on the right side of his neck. The physician who saw him at home also noticed puffy eyelids, and the boy's temperature was 102°. Of course, you all know what I am reporting to you. This had been one of the cases of scarlet fever where the initial symptoms—rash and sore throat—probably had been so mild that they were overlooked. The child showed two typical complications that so frequently follow an infection by the hemolytic streptococcus, namely, acute cervical lymphadenitis and acute hemorrhagic nephritis. I limit myself to describe to you the further course of the lymphadenitis. On the second day at home, one lymph gland had grown in size and the skin covering it had become tense and somewhat shiny. This occurred in spite of the fact that penicillin injections had been started immediately after the child's return from school. Two days later, the lymph gland had reached the size of a

* Read before the sixty-first annual session of the Mid-South Postgraduate Medical Assembly, Memphis, Tenn., Feb. 14-17, 1950.

plum, the covering skin was reddened and some deep fluctuation could be palpated in the lump, which was extremely tender. Twenty-four hours later the center of the swollen area appeared yellow, proof of the formation of an acute lymph gland abscess.

This very well illustrates the fact that penicillin levels within abscesses rarely reach a sufficient amount to be effective. What should be done? The old surgical answer to this question would be incision and drainage, but everybody who has seen the consequence of this operation knows that drainage is often prolonged, healing slow and followed by disfiguring scars. The modern method of choice consists of daily punctures, withdrawal of pus and replacement of the withdrawn fluid by equal amounts of penicillin solution. Intramuscular penicillin injections have to be continued until temperature is normal, and, with this combined method, there is no scar formation and complete healing usually is attained within a week. The fever curve in these cases is usually high, continuous, but some of them show septic spikes due to resorption of infectious material into the blood circulation. I would like to show you two slides where an infection with streptococci has overwhelmed the tissue of this organ. You see the innumerable intra and extra-cellular streptococci clouding the normally distinct histological picture. You see also cell necrosis and cell debris.

As soon as this happens, the temperatures become septic, usually high in the evening and low in the morning, and the temperature increase may be initiated by chills. The children look acutely ill, profuse sweats follow the high evening temperatures and the pulse remains fast and feeble, even in the morning when the temperature is low. Acute, soft swelling of the spleen and skin petechiae, albumin, blood and casts in the urine, and soft systolic murmurs are frequently found. The blood culture may become positive and generalized lymph gland swelling is seen. In any such case, resistance tests should be done with penicillin and sulfa drugs as well, to determine the exact dose of the antibiotics.

The second case history should show you another typical picture of acute lymph gland pathology. A 4-year-old girl suddenly became sick with projectile vomiting and intense abdominal pain. There was some tenderness around the navel, more towards the right lower abdomen than to the left. Her temperature was 102°. Her white blood count was 8,200 white blood cells with 62 per cent lympho-

cytes. The consulting surgeon doubted the diagnosis of acute appendicitis, which had been made tentatively, but did not want to take a chance and performed a laparotomy. The appendix was found entirely normal; however, there was generalized mesenteric lymph gland swelling and numerous petechiae could be seen on the serosa covering the enlarged glands. This shows you a case of acute mesenteric lymphadenitis simulating the signs and symptoms of acute appendicitis. In any such case, a laparotomy is justified since it is better to remove a normal appendix than to miss an acute appendicitis.

In about 25 per cent of all cases of brucellosis enlargement of the superficial lymph nodes occurs and *Brucella* has been cultured from the lymph nodes. The white blood count is around 10,000, the sedimentation rate is normal, agglutination tests become usually positive and the blood culture confirms the diagnosis in many of the suspected cases. A definite diagnosis of the multifold clinical pictures of this disease which is not too rare in children can only be made by laboratory tests.

Anthrax in children is extremely rare and usually seen in those where the father is working with skins of cattle. The diagnosis is made by the appearance of the typical gangrenous malignant pustule and regional lymph gland swelling. There are high septic temperatures and usually on the second day already, there is generalized lymph gland swelling. Penicillin is most effective in these cases.

In tularemia there are three types that affect the lymph glands, the ulceroglandular type in which the primary lesion is a papule of the skin which later becomes an ulcer. This is accompanied by enlargement of the regional lymph glands and this type includes all the cases of pulmonary and meningeal forms. There is evidence of the skin route of infection. In the oculoglandular type, in which the primary lesion is in the conjunctiva, again, regional lymph gland swelling is seen. No primary lesion is seen in the so-called glandular type but only enlargement of lymph glands in one region is found. Only the typhoid type presents neither a primary lesion nor lymph gland enlargement. The incubation time may be as long as 21 days, but in the great majority of cases the symptoms follow five days after the infection.

The onset is sudden with a chill, aching body pains, vomiting and fever, which is always spiking. The patients are frequently considered as flu cases. Only careful histories that

suggest contact with rabbits, chiefly wild rabbits, lead to the establishment of the diagnosis. Convalescence is very slow after an illness that lasts usually for one month, and there may be transient recurrences of fever, but usually recovery without complications occurs. A persistent ulcer on the hand that does not respond to antiseptics, and regional lymph glands, which will not resolve, should direct the attention to this condition and the same suspicion should be entertained if there is a history of fly bite on the head, tick bite beneath the clothing, or squashing of flies or ticks between the fingers. Eventually, bites of certain animals or insufficiently cooked white rabbit meat may cause the disease, and it is easy to confirm the diagnosis by the most reliable agglutination method. Convalescent serum, if available, has been used with some effect; recent reports speak about good results with chloromycetin. Sometimes incision and drainage of a broken-down lymph node becomes necessary.

In contrast to the acute bacterial infections, the point of entrance in virus infections is usually dubious and their first signs are often generalized lymph gland swelling and fever. The diagnosis of typical cases of German measles is quite simple, but I have observed a large number of children that had contracted this disease and exhibited generalized lymphadenopathy for the period of three days before the rash came out. In German measles, as well as in acute infectious mononucleosis, the epitrochlear lymph glands on one or both sides may swell up. This very typical and peculiar fact has not been explained up to now.

A rather interesting case history is the following: A 10-year-old girl suddenly started vomiting and complained of severe headaches. On examination there was a stiff neck, a positive Kernig, and a positive Brudzinski. With these signs of meningeal irritation—it was during the polio season—the child was rushed to the hospital. A spinal tap revealed a clear, entirely normal fluid, which was eliminated under increased pressure. The child was taken to the ward and there, bilateral swelling of the epitrochlear glands was found. A blood count was done. There were 12,500 white blood cells with 92 per cent lymphocytes, many of them suggestive of acute infectious mononucleosis. It is not unusual that this condition exhibits the signs and symptoms of meningism in the beginning.

If there is an infected wound on the foot or leg and spread of the infection through the lymph vessels, the inguinal glands become swollen. If there is an infection on the hand or arm and lymphogenic spread, the axillary glands become swollen while the epitrochlear glands remain usually normal. However, in virus infections where there is generalized lymphadenopathy, and in syphilis with generalized lymph gland involvement, swelling of epitrochlear glands can be seen most frequently. The diagnosis of glandular fever is, as you know, made by the appearance of the typical cells in the blood stream and later confirmed by the heterophile agglutination test in a titer of more than 1 to 140. There are, however, cases of this disease leading to considerable generalized lymphadenopathy that never show a positive Paul-Brunell test, and the same is true of the picture of acute infectious lymphocytosis that was described a few years ago by Carl Smith.

The following case history again shows the significance of epitrochlear lymph gland swelling in certain pathological conditions. In a newborn baby there was bilateral sero-sanguinous discharge from both nostrils. Brownish-red papules were seen on the reddened and shiny skin of the palms and soles, and there was one large papule near the rectum. There was generalized lymph node swelling, including the epitrochlear glands, and a four plus Wassermann reaction confirmed the diagnosis of congenital syphilis. This diagnosis, however, is not always as easy since generalized lymphadenopathy may be, for a prolonged period, the only sign of the condition. In these cases, blood tests and x-rays of the skeleton will help to establish the diagnosis.

The next condition was frequently seen in former years but, for unknown reasons, is at present rather rare. A 9½-year-old boy who visited the clinic of the Metropolitan Hospital in New York, had lost much weight during recent months, had no appetite and was running a low grade fever in the evenings. There was definite photophobia, and the child complained about itching eyelids. Phlyctenular conjunctivitis was seen in his right eye and there was a chronic rhinitis with mucopurulent discharge from the nostrils, excoriating the surrounding skin. On both sides of the neck there were large packages of swollen, non-tender lymph glands that were partly matted together. One of these nodes was about the size of a small plum.

The skin that covered this lymph node was bluish and fluctuation could be felt. Thin sterile pus was obtained by aspiration and the tuberculin test was strongly positive. This form of tuberculosis is typical of the lymphogenic spread of the condition, infection of the throat lymphatics by sputum, or by the bovine type of tuberculosis due to drinking of milk from diseased cows. It has a chronic, rather benign course, and responds well to streptomycin. Half a gram should be given every 24 hours in two divided doses, for a period of three months, except if dangerous side-effects such as dizziness or diminution of hearing appear.

Most deleterious results are seen in cases of lymph gland tuberculosis when these nodes erode blood vessels causing miliary tuberculosis, or when they break into a bronchus leading to the rapidly destructive, caseous forms of tuberculosis seen quite frequently in infants or adolescent children.

Rather interesting is the following case history:

A five-year-old boy contracted a mild case of diphtheria and received, on the second day of the disease, 10,000 units of diphtheria antitoxin. The further course of recovery was uneventful up to the ninth day after the onset. On that day the temperature rose to 103, generalized lymphadenopathy could be seen, and the diagnosis of allergic lymphadenopathy was established one day later when an urticarial eruption occurred. In this type of lymph gland pathology, there is hyperemia and infiltration visible on biopsy with eosinophilic cells in predominance.

In cases where blood dyscrasias are responsible for generalized lymph gland swelling, pathologically changed blood counts with youth forms of white blood cells originating from the myeloid or lymphatic system, answer the diagnostic question. It should, however, be stressed that peripheral blood smears may appear entirely normal during the so-called aleukemic phase and that, wherever there is a suspicion of this condition, a bone marrow smear should be performed.

The next case history concerns a 7-year-old girl. A lump in the groin had been noted, which did not bother the child. About half a year later the node grew rather fast. A biopsy was done exhibiting the histological picture of Hodgkin's disease. You see numerous giant cells with centrally located nuclei, as they were described by Reid and Sternberg. The patient remained well for another half year,

when she started complaining of abdominal pain. She became fatigued, and there was increasing weakness, spiking fever, and severe anorexia. Several small lymph nodes appeared on both sides of the neck and in the other groin. The spleen became palpable. The red cell count was normal at this time but there were 20,000 leucocytes with 80 per cent polymorphonuclear cells. After a few months' duration, the swollen cervical lymph glands had greatly increased in size and on the right side of the neck the glands became matted together and their outline indistinct. There was good response to x-ray radiations with the lymph glands returning to their normal size within a few weeks. The temperature became normal and the child was feeling well, but only a few weeks later lymph-node swelling and fever reappeared. The child started to cough and bronchial breathing could be heard throughout the right upper lobe. There was dullness over this area and dense clouding could be seen there by x-ray. A second series of therapeutic x-ray radiation and injections of mustard gas were unsuccessful. After a rapid downhill course, the child expired 14 months after the onset.

Jackson and Parker, who wrote an excellent monograph on this condition, differentiate between the so-called Hodgkin's paraganuloma, a very low number of Reid's giant cells are found, the process is rather benign, and even cases of spontaneous cure are reported, but at any time paraganuloma may change into the true granuloma and fatality is unavoidable. The still more rapid course of Hodgkin's sarcoma is not seen in children.

Carcinomas, as well as sarcomas, may affect the lymphnodes in children, but only the lymphosarcoma is frequently encountered in individuals younger than 12 years of age. It usually arises in a lymph node group and through proliferation of more or less atypical malignant lymphocytes. The tumor locally destructs, propagates along lymph pathways and is capable of true metastasis to distant points. The involved lymphnodes grow rapidly and soon become matted together and adherent to adjacent structures. In children, this is always suspicious for lymphosarcoma. The diagnosis can only be made by a biopsy. Lymph node gangrene is frequent and cachexia quite marked. Spontaneous regression is rare. Striking disappearance of tumor masses may follow x-ray radiation but the eventual fatal outcome is not changed. Each radiation, un-

fortunately, increases the resistance of the tumor to the ray.

So far, I have reviewed the common conditions causing pathology of the lymphatics in children. Here, I should like to show you a few photographs of a 7½-month-old male infant of Swedish extraction. This baby became ill with a sore throat and three days after the onset the mother noticed swellings on his neck. Two weeks later when I saw the baby for the first time in consultation there was tremendous generalized lymphadenopathy and three tentative diagnoses were made: Leukemia, Hodgkin's disease, or lymphosarcoma. None of them were found. The biopsy of an inguinal lymphnode showed that reticulo-endothelial cells, also called histiocytes, had completely replaced the normal tissue of the gland. Many giant cells were seen. With these findings the diagnosis of Letterer-Siwe's acute reticulo-endotheliosis was established. Reticulo-endotheliosis may take a very chronic course and thereby produce the clinical picture of Hand-Schiller-Christian's disease. In these cases exophthalmos, bony defects, and diabetes insipidus are seen. If the disease is an acute condition it takes a very rapid fatal course terminating life within a few weeks or months. The acute condition is characterized by generalized lymphadenopathy rapidly progressing cachexia and fulminating purpura. The histological picture is entirely identical in the chronic and in the acute conditions respective-

ly. There is first proliferation of histiocytes which invade and replace the adjoining tissues. These histiocytes are short lived and spindle-shaped fibro-blasts immigrate, and eventually there is formation of scar. The following slides will illustrate the progress of this process. For the acute condition there was no treatment until recently. There are reports now that anti folic acid compounds bring at least temporary improvement and that after the injections of Cortison remissions lasting as long as a year were seen.

The outline of lymph gland pathology in pediatrics, that I have given you, is far from complete. I was not able to discuss the deviations of the mechanics of lymph flow or the chemistry of the lymph under pathological conditions, nor could I talk to you about the results of modern ferment research that concerns the physiology and pathology of the lymphatics. Each of these chapters would require a separate lecture. I also would like to quote the literature but since scientists have known about the important and significant role that lymphatics play in the defense of the human organism, innumerable articles have been written on these subjects. It would be useless just to cite a few of them. I hope, ladies and gentlemen, you will understand that this cannot be the purpose of this lecture.

For these reasons only the most common features of lymphadenopathy in children were presented. Thank you!

VALENTINE CENTENARIAN

A most charmingly observed event within the professional circle took place on February 14 at Prentiss, Mississippi, when the children of Mrs. William Mikell Waller held open house in honor of Mrs. Waller's hundredth birthday. The delightful affair was given in the home of Mr. and Mrs. Merle Allott Riley, Dr. B. S. Waller, Mrs. Leon Tyrone, Mrs. Dolphus Leon Batson, Mrs. Wilburn D. Hilton, and Judge and Mrs. Curtis Longino Waller, children of the honoree, assuming the role of hosts.

Invitations uniquely depicted the unusual longevity mark with a locket centering a red

heart, in one side Mrs. Waller's first baby picture, in the other side, as she is today, a gentle, snow-haired cameo. Inside the fold two other medallions rimmed in gold presented William Mikell Waller and Clarinda Cordelia Longino on their wedding day.

Member of a family long associated with Mississippi history, longevity is only one of the proud possessions of the illustrious Waller family. Friends over the entire state joined Dr. Waller in happy felicitations on this anniversary celebration.

Carcinoma of the Thoracic Esophagus, Its Recognition and Treatment*

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IN THE YEAR 1930, 117,800 persons died of malignant disease in the United States. In 1947, 17 years later, 189,811 persons died from this cause. One reason for the 61 per cent increase in the number of deaths is that over this same period the population of the United States increased by 21,000,000 persons. Furthermore, the number of persons over 40 years of age increased materially; by 1947 there were 13,500,000 persons in this age group. Since deaths from cancer occur more frequently in older than in younger persons, here is another obvious explanation for the increase in the number of cancer deaths. Neither of these explanations, however, in any way lessens the importance of cancer as a public health problem.

Let us turn to the situation in our own state. In Mississippi, in 1930, there were 1,072 deaths from all varieties of cancer. In 1947, 17 years later, the number had increased to 1,813, an increase of 69 per cent. In the same year the rates by states ranged from 174.9 per 100,000 in New York to 72.2 per 100,000 in South Carolina. The Mississippi rate was 86.5 per 100,000 population. The Mississippi rate, like the South Carolina rate, is however, not as flattering as it might at first seem. Mississippi has a relatively young population, a matter of great importance when deaths from neoplastic disease are under consideration, while in both states cancer is apparently not recognized as often as it should be and the assignment of deaths for which it is responsible is therefore not entirely accurate.

Malignant disease is now the second most frequent cause of death in the United States. In Mississippi, in 1946, it caused one of every eleven deaths, accounting for 7.3 per cent of all male deaths and 11.3 per cent of all female deaths. In the whole country in that year it was the leading cause of death among women between the ages of 35 and 55, and it accounted for more than a quarter of all deaths among women between 45 and 60 years of age.

In 1944 cancer of the digestive organs constituted 35.4 per cent of all the newly diagnosed cases of cancer in males and 22.9 per cent of all the newly diagnosed cases in females in the United States. In the years 1944-1946 inclusive 1.8 per cent of all cancer deaths in the United States occurred in patients with cancer of the esophagus. In Mississippi, however, during this same period, there were only 39 deaths from this cause, 12 in 1944, 17 in 1945, and 10 in 1946, these fatalities representing 0.8 per cent of all deaths from cancer in the state. On the other hand, over the same three-year period, the records of the State Bureau of Vital Statistics show that 789 persons died of cancer of the stomach, 274 in 1944, 626 in 1945, and 153 in 1946, these fatalities representing 15.9 per cent of all cancer deaths in the state. As a matter of fact, 10 per cent or more of all malignancies of the stomach involve the cardiac end, and I am strongly inclined to believe that probably 10 per cent or more of the patients who are recorded as having died of gastric cancer actually died of cancer of the lower end of the esophagus or of the cardiac end of the stomach or of an extension of the disease from one of these locations to the other.

The Present Surgical Status of Cancer of the Esophagus

Whether or not these statistics are precisely correct is not a matter of great importance. What is important is that every person with cancer of the esophagus, if he is not treated promptly or if he is improperly treated, will die of the disease and will have a most miserable death. Until the past decade there was not very much surgeons could do about that unhappy set of circumstances. Curative surgery had frequently been attempted, but the number of successful results was almost infinitesimal. In 1877 Czerny successfully excised the esophagus by the extrathoracic route and in 1884 von Mikulicz duplicated this performance. In 1908 Voelcker resected the lower portion of the esophagus by the abdominal route and in 1913 Torek operated successfully by the transthoracic route.

* Read before the Section on Surgery, the Mississippi State Medical Association, Biloxi, Mississippi, May 11, 1949.

It was not until 1938, however, that the modern intensive and productive interest in this field of surgery developed, following Phemister's successful resection of a growth involving the cardiac end of the stomach, followed by esophagogastrostomy, through a transthoracic approach. Over the succeeding decade Sweet, Garlock and others have further developed and standardized this procedure until now it is technically possible to offer to a patient with carcinoma of the esophagus, including any part of the thoracic esophagus, who is seen early enough, a surgical procedure which includes extirpation of the affected portion of the esophagus and the lymph nodes with restoration of esophagogastrintestinal continuity.

Modern surgery thus offers a hope of cure in favorable cases and a hope of palliation if cure is not possible. Removal of the primary growth always aids the patient, even if it cannot save his life. The establishment of a gastrostomy on the other hand, simply adds to his misery, just as a palliative colostomy offers little to a patient with carcinoma of the rectum unless the rectum is also resected.

Carcinoma of the esophagus has thus become an important surgical disease because it has become technically possible to remove the entire involved thoracic portion of the esophagus, to anastomose the proximal end of the esophagus to the stomach or to the jejunum, to accomplish the procedure with a reasonably low mortality rate, and to hold out to the patient, at the same time, the hope of cure and the assurance of palliation if cure is not possible. A final favorable circumstance is that most cancers of the esophagus are located in the lower third or infra-aortic portion, which makes resection a far simpler and safer procedure technically than carcinoma of the supra-aortic portion, to which I shall devote my remarks.

Diagnosis

If the potentialities of the new surgical approach are to be realized to the full, diagnosis of carcinoma of the esophagus must be improved. It is ordinarily thought, and I am afraid taught, that the symptoms and signs of the disease are chiefly dysphagia or actual inability to swallow, great loss of weight and strength, spitting up of blood, and concomitant anemia. This is not the picture of carcinoma of the esophagus in its operable stage but rather the picture of impending death from a

disease that is already hopeless. The brilliant accomplishment of surgery in the field of thoracic manipulations will be accompanied by increased operability, decreased mortality and improved prognosis only when this picture is forgotten and the picture of the patient with early cancer of the esophagus is substituted for it.

Any patient, certainly any male patient, in or beyond middle life who has the slightest difficulty in swallowing, no matter how minimal it may be, should be suspected of having cancer of the esophagus and should be studied with that diagnostic possibility in mind. Occasionally there is no obstruction early in the disease, but as a rule alteration in the ability to swallow occurs quite early. The person with a normal esophagus is not aware of the act of swallowing. It is abnormal, in fact, to be aware of the act, and that fact alone should indicate the need for careful study.

The diagnosis of cancer of the esophagus is usually simple. Little more is needed than roentgenologic studies—provided that the roentgenologist is competent. Roentgenograms of the esophagus and fluoroscopic observation of its activity during the act of swallowing consume little time, provoke no pain, and are practical from the economic standpoint. They should always precede esophagoscopy investigation.

When roentgenograms are positive, or suspicious, visualization of the esophagus is the next step, with, if necessary, biopsy. Cytologic studies of fluid removed from the esophagus are sometimes diagnostic. The key to successful diagnosis, however, is the suspicion that the disease may be present in, and the roentgenologic investigation of, all persons who have any symptoms referable to the esophagus, with dysphagia heading the list. When this routine is carried out, diagnoses will be made with certainty, and will be made much earlier, than they are now being made.

Once the diagnosis of cancer of the esophagus is made, the only point to determine is whether or not the patient is suitable for surgical exploration. Most surgeons do not share the point of view, chiefly advanced by the Scandinavian group, that this disease is best treated by roentgen-ray therapy. Their contention that results by this method equal those obtained by surgery, and are accompanied by less hazard to the patient, I think is not valid. It might have been true ten years ago, or even five years ago, when opera-

tion was accompanied by a prohibitive risk, but it is not true today. Not until sufficient time has elapsed for a large series of patients treated by surgery at a stage of the disease when surgical treatment is possible to be compared with a similar series treated by roentgen-ray therapy can the categorical claims of roentgenologists be accepted. Meantime, the patient's best interests will be served if he is treated by surgical extirpation in any case in which the disease has not progressed to the point where such a procedure is impossible.

Preoperative Preparation

Patients with cancer of the esophagus must be prepared for operation with extreme care, for the procedure to which they must be submitted is one of magnitude. Anemia, which is usually present, must be corrected by large quantities of blood. Malnutrition, which is present whenever the disease is in any way advanced, must be corrected by appropriate means. For my own part, I have always considered that jejunostomy for preoperative feeding has very little to offer. It is, in fact, a procedure of desperation and despair, and I would say that a patient who requires it for preparation has small chance of withstanding the more radical surgery still to come. It is quite possible, however, to correct deficiencies of nutrition, particularly protein deficiencies, by other methods.

Most elderly patients have degenerative diseases of the heart, the kidneys and the liver, and the clock, unfortunately, cannot be turned backward to their younger and healthier days. It is quite possible, however, so to protect them against cardiac, renal and hepatic disasters that their risk is materially reduced.

Special comment must be made upon the work of Lyons on blood volume. It is of great practical importance in malignant disease, though the equipment, personnel and training required for the determinations make them impractical in any but well equipped hospitals. This disadvantage, however, may be overcome if one bears in mind two things, 1) that chronically ill persons, in which category patients with malignant disease are included, usually have contracted blood volumes, and 2) that it is possible to be grossly misled by ordinary determinations of hemoglobin, erythrocytic levels and similar values, and if these persons are protected against deficiencies which probably exist.

No comment is necessary on the preoperative administration of antibiotic agents except that it is well worthwhile.

Technical Considerations

My own preference is to approach the esophagus by way of an incision on the left side over the eighth rib, extending posterolaterally from the costal arch, so that the entire rib can be resected. It is often necessary to divide the seventh, sixth and fifth ribs for better exposure but it is seldom necessary to resect them. When the lesion is identified, it is carefully examined, to determine its operability, and also to determine the level at which the anastomosis must be constructed. It must be borne in mind, since cancer of the esophagus spreads along the submucous lymphatics, that it is essential to divide the esophagus well away from the tumor as it is grossly outlined. It is taken for granted, of course, that the surgeon who undertakes this operation has a precise knowledge of the vascular supply to the esophagus and to the stomach. The essential steps of the operation are mobilization of the esophagus, resection of the appropriate segment, and re-establishment of gastrointestinal continuity by anastomosing the stomach, which previously has been mobilized and brought up into the chest, to the proximal end of the esophagus. If the extent of the extirpation is such that the anastomosis must be supra-aortic, it is made anterior to the aorta. Crushing clamps are avoided and fine silk sutures are used throughout.

Before the chest is closed a dePezzer catheter is usually introduced for drainage. Also before the wound is closed penicillin and one of the sulfonamide preparations is placed in the cavity in liberal amounts. Chemotherapy and antibiotic therapy are continued after operation, streptomycin usually being added to the agents used before operation. The patient is carefully observed to be sure that shock, mediastinal shift, infection of the pleural space, or other complications have not developed. All of them are dealt with in the usual fashion if they occur.

Brief summaries of the records of certain patients subjected to surgery on this service are illustrative of many of the points discussed.

Case Reports

This patient, a 61-year-old male, one month before registering at the Clinic became con-

scious of the act of swallowing, very quickly developed dysphagia and inability to take nourishment other than liquids and lost 50 pounds in weight in 30 days.

Roentgenograms showed carcinoma of the esophagus the lesion demonstrated by esophagoscopy completely encircled the esophagus at a level 15 cm. below the cricopharyngeus. Biopsy proved the presence of a grade II epidermoid cancer. Exploration revealed involvement of the aorta and death occurred a few weeks later from carcinomatosis.

This patient, a 44-year-old female, six months before consultation developed difficulty in swallowing, progressive in character and lost 50 pounds in weight.

Roentgenograms confirmed by esophagoscopy studies showed a cancer 25 cm. below the incisor teeth. A supra-aortic resection was accomplished but the patient died nine days later of mediastinitis. The lesion was grade III with node involvement.

This patient, a 68-year-old male, 11 weeks before consultation developed progressive dysphagia and lost 29 pounds in weight.

Roentgenograms showed carcinoma of the lower esophagus. Exploration revealed involvement of the lower esophagus and cardiac end of the stomach. Resection was accomplished with anastomosis of the distal stomach to the esophagus at the aortic arch. On the seventh postoperative day at which time the patient was up and about he suddenly collapsed and died. Necropsy showed the suture line healed, there was no mediastinitis and no residual malignancy. No cause for death other than inanition was found.

A 51-year-old male, six months before consultation developed slight trouble in swallowing and weight loss. A physician without making any examination assured the patient he had no organic disease. Three months later, a second physician informed him he had lead poisoning. Finally a third physician referred the patient with a presumptive diagnosis of cancer of the esophagus.

X-ray study showed the lesion in the distal esophagus. Resection was accomplished of the distal 6 cm. of esophagus and proximal stomach.

Roentgenograms 15 months later show no evidence of local recurrence and clinically the patient is well.

A 54-year-old male for two months had slight dysphagia and weight loss.

Roentgenograms indicated a lesion at the terminal esophagus or cardia.

A spot film indicated a lesion at the cardia.

Exploration revealed a huge sarcoma. The terminal esophagus, entire stomach, spleen and tail of the pancreas were resected. The jejunum was anastomosed to the esophagus. Recovery was uneventful but death occurred a few months later of recurrence.

The final case is reported through the courtesy of one of my former fellows in surgery, Dr. C. Frank Chunn.

A 50-year-old male had cancer at the cardiac end of the stomach with esophageal involvement.

Resection was done of the terminal esophagus, entire stomach and tail of pancreas. The jejunum was joined to the esophagus using a Roux type anastomosis.

One year later there is no evidence of recurrence.

Summary and Conclusions

The increasing number of deaths from cancer, even though they can be explained by the increase in population in the older age groups, makes this disease a public health problem of major importance. Cancer of the esophagus, although it accounts for a relatively small portion of all malignant growths, has become a disease of surgical importance since the technique of transthoracic resection and esophagogastrostomy has been perfected and the mortality has been reduced to a reasonable level. The full possibilities of the technical improvement will not be realized until diagnosis is improved and patients are seen earlier. Pre-operative preparation is of the greatest importance, as are certain points of technique. These various considerations are briefly discussed.

DISCUSSION

Dr. Lee R. Reid (Jackson)—Compared with other surgical specialties in a matter of age, chest surgery is a mere infant. In the field of even this young specialty resection of the esophagus is one of its most recent triumphs. In fact, resection of the esophagus is yet too young a procedure to allow us to evaluate clearly its limitations and results, but not its indication in malignancy. A diagnosis of cancer is all the indication needed for an attempt at resection.

There are two anatomical characteristics which render this organ peculiar. One is its

virtual insensibility to pain and the second is its lack of a serosal covering. The esophagus contains very few sensory nerves, which is an advantage to us in one way but in another way this insensitivity unfortunately leaves out one important factor of warning, namely, pain. Early carcinoma produces little or no actual pain.

One of my professors of medicine in lecturing on the differential diagnosis of stomach disorders once explained symptoms in this way. The Chinese language contains relatively few words. The same identical one pronounced in a low voice means one thing, in a high voice another entirely different thing, with a rising inflection another, and with a lowering inflection still another, hence, many ideas could be expressed with the same word. He then stated that the stomach speaks Chinese. With only indigestion, nausea and vomiting, and pain, it had to tell us by expressing these symptoms in certain ways what pathology is present.

The esophagus doesn't even speak Chinese because in early malignancy when the lesion is operable the esophagus has only one word in its vocabulary, that of obstruction in some degree to the easy passage of food. As Dr. Parsons pointed out, advanced or complete obstruction of the organ is almost synonymous with hopelessly advanced disease. Minor degrees of obstruction oftentimes are not noted early and are then called to the physician's attention when cure is still within the realm of possibility. If there is one thing I want to emphasize in this splendid presentation by Dr. Parsons it is the statement he made of never disregarding or treating lightly the complaint of difficulty in swallowing of one over forty. The patient often expresses this as the feeling of a foreign body being present. Probably the simplest of all fluoroscopic examinations is the barium swallow, which in carcinoma of the esophagus almost always demonstrates enough to excite us to further examination. A patient is unlikely to be aware of the growth until he experiences enough feeling of obstruction to show on fluoroscopic examination.

Here we have a condition in which the diagnosis usually is quite simple, in which we of late have a cure within our grasp and which without prompt and vigorous surgical treatment invariably leads to a lingering and miserable death.

Technically, as Dr. Parsons stated, at present no portion of the organ is immune to surgical attack. Its abdominal viscera means

that great care must be exercised in exact application of the sutures during anastomosis, gentleness in handling, and conservation of blood supply to any of the esophagus not resected.

Postoperatively these patients are amazingly comfortable even when the esophagus is entirely excised and the stomach sutured to the lower pharynx. Some of these particular patients, however, state that they have to be careful about bending over forward soon after a meal because vomiting becomes exceedingly easy.

Dr. William C. Quinn (Jackson)—There are a few points that need to be stressed again and again. Early diagnosis is essential. Any change in the mechanism of swallowing, sticking sensation in the throat, substernal or epigastric areas, symptoms usually included in the term dysphagia, deserve a very thorough investigation. This was the cue in well over fifty per cent of our cases.

We believe the best results are afforded by surgery. In our series the operative mortality has been reduced during the past three years to seven per cent, whereas previously it reached a high figure of twenty-four per cent. This lowered mortality compares favorably with other forms of gastro-intestinal surgery for malignancy.

I would like to reiterate that a preliminary gastrostomy should be avoided in all lesions of the lower three-fourths of the esophagus and cardiac end of the stomach, unless there is no hope of subsequent resection of the carcinoma. A gastrostomy will interfere with the mobilization of the stomach in performing an esophago-gastric anastomosis. If the nutrition of the patient needs additional support, other than parenteral feedings, a preliminary jejunostomy rather than a gastrostomy should be performed. As Dr. Parsons has said, the number of such cases should be small.

The transthoracic approach with resection of the sixth, seventh, or eighth rib and division of one or more ribs above and below is usually used in resection of lesions of the upper and middle one-third of the thoracic esophagus. For lesions of the lower one-third of the esophagus and cardiac end of the stomach, we prefer the combined thoraco-abdominal approach. The abdominal incision is extended upward and then laterally along the left eighth rib. A resection of the anterior half of the eighth rib is carried out and the diaphragm

divided. This gives excellent exposure for lesions both of the lower one-third of the esophagus, and cardiac end of the stomach. On the other hand, many surgeons prefer to limit themselves to an abdominal incision when dealing with carcinoma of the cardiac end of the stomach.

Carcinoma of the esophagus has a tendency to spread submucosally up and down the organ well beyond the palpable lesion. One may assume that he has given an adequate margin to the tumor at the time of resection, only to find later from microscopic studies that tumor cells are still present in the submucosa at the margin of the resected esophagus. For this reason we believe that immediate frozen sections should be performed following removal of the specimen to assure that the operator has removed an adequate margin of uninvolved esophagus beyond the tumor.

I would like to report an interesting complication resulting from the resection of a carcinoma of the middle one-third of the thoracic esophagus. The lesion was removed from a 46-year-old white man and an esoph-

ago-gastrostomy was carried out anterior to the arch of the aorta. Feedings by mouth were begun on the second postoperative day. He developed signs of obstruction with regurgitation of feedings. Because he had become a nutritional problem, it was decided on the fifth postoperative day to perform a jejunostomy. At the time of the abdominal operation, a greatly enlarged spleen approximately five or six times the normal size was encountered. This organ was engorged with venous blood and was pressing on the stomach, causing obstruction of that organ. A splenectomy was carried out and the patient subsequently recovered. It is surmised that during the process of freeing up the stomach, and ligating the vasa brevia and left gastroepiploic vessels, a procedure done somewhat blindly, the splenic veins were ligated and led to the venous-engorged spleen. As during the process of mobilizing the stomach, the spleen is easily accessible and literally interferes with the operation, a splenectomy is being carried out routinely on all such cases at the New York Hospital. This is being done in order to prevent such complications.

What Should the Syphilis Control Program of the Future Be?

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SUFFICIENT KNOWLEDGE of the diagnosis, treatment, pathology, and epidemiology of syphilis is at hand for its complete control if this knowledge is fully applied. Proper application of this knowledge and associated techniques to the public would make of syphilis a minor problem within a period of eight to ten years. Success in the solution of the problem would be one of the outstanding victories in the history of applied medicine, particularly in view of it springing from an uncontrollable sex activity. Already we are approaching victory and the last miles may be the most difficult or the easiest to travel depending upon how they are traveled.

There are just two relatively small groups of individuals who hold victory in their hands and who can deliver it to the public. They

are, first the private practitioners of medicine, and second the official health agencies. These two groups or either of them can deny the people freedom from syphilis by their improper action or lack of action in delivering the masses from this unnecessary scourge. The stage of development of scientific knowledge about syphilis and public concern in regard to it has been reached at which the fatal blow to syphilis can be struck. I do not believe that either the private physicians or the public health workers want to accept the blame for failure to reduce this disease to one of little consequence. Rather than this, these two groups jointly must do what the public expects of them—namely, move rapidly forward toward success. Frankly the official public health workers do not propose to accept the blame for failure if there be failure—and there must not be failure. Health officials much prefer to give complete credit to private phy-

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sicians for their success in controlling this disease.

What is meant by control of syphilis? In this discussion we mean the reduction of syphilis in the Negro race to an incidence of 1 to 2 per cent from its present level of 10 to 15 per cent, and the reduction of the disease among the white race to a level of only an occasional infection from its present level of approximately 1 per cent. In addition we mean the acquisition of enough knowledge about syphilis by the general public as will maintain the projected low level of infection. To do less than reach this goal will require explanations, the substance of which might not be too complementary of the private physician or health agencies.

It is only to the extent that private physicians fail to produce control and leave it to be done by health agencies that such agencies must perform the expected task. The people expect control by either or both groups and realize it cannot be done without active participation of private physicians. On the other hand, solution of the syphilis problem reaches far beyond the realm of endeavor of the private physician. A happy solution to this problem would be for the private physician to think of every case of syphilis he treats as a part of his community with syphilis and to treat the community also in cooperation with the health department just as carefully and thoroughly as he treats his individual case. Syphilis is too cosmopolitan in its ramifications for a given case to be considered of no concern to anyone except the case and his physician. Why act differently toward the spirochete invading the community than you would toward a criminal at large in the community? Certainly no physician would knowingly hide a rapist in the sanctum of his office.

What progress has been made in Mississippi and the nation in the past few years in actually getting syphilis under control? Is there reason to believe on the basis of this progress that syphilis can be practically eliminated? Through various methods of measuring the incidence of the disease in Mississippi in the period 1938-1943, it was concluded that roughly 25 per cent of the Negro population and 2 per cent of the white population in Mississippi were infected with syphilis in its various stages. The percentage infection among Negroes varied in different areas from 8 to 35 per cent depending to a great extent upon the

density of the population. In the past two years evidence has been rapidly mounting that there has been at least a 50 per cent decline in the incidence of the disease. In many areas the decline has been greater. Some of this evidence is as follows:

1. The number of cases of infections (primary and secondary) syphilis discovered in 1948 was 2,380 while for the year of greatest productivity (1946) the number was 3,993. The reduction in cases found of almost 50 per cent is remarkable, for in 1948 the effort to find cases was much greater than in the peak production year.
2. Prenatal patients now under supervision of health departments show only 44 per cent as many infections as was the case six years ago.
3. Infants with syphilis are very infrequent compared to a few years ago.
4. Mass blood surveys of the general population in the last year in many areas show only about 8 to 10 per cent of the adult Negro population with inadequately treated syphilis while in these same areas four to six years ago the percentage ranged from 15 to 25. That the incidence has tumbled so markedly in the last four to six years under modern control methods is sufficient evidence to justify belief that it can be reduced further to a problem of relative insignificance. I am sure that this record of progress could not have been possible without some recent discoveries in the diagnosis and treatment of syphilis.
5. Since the rapid treatment centers started operation, 86,798 cases have been admitted to these centers a very large majority of which was syphilis. This massive treatment together with more than this number treated in local clinics before the centers opened is bound to have favorably influenced the total backlog of the disease in the state.

Let us mention some of the scientific discoveries which have made this record of achievement possible and which leave no excuse for failure in ultimate control.

1. There should now be no question in anyone's mind about penicillin being the most effective, least toxic, and most inexpensive therapeutic agent for treating all forms of syphilis. It is now possible to give ade-

quate treatment to all stages of syphilis except late neurosyphilis with penicillin given in as short period as five days. Our schedule used in the rapid treatment centers is 600,000 units (2 cc.) penicillin procaine in oil with aluminum monosterate added daily for six days for all except grades two and three neurosyphilis and for these 300,000 units (1 cc.) of the same product daily for twenty days.

Two cc. of penicillin procaine in oil with 2 per cent aluminum monosterate in the muscle daily for six days on an ambulatory basis is good therapy. Compare this with the old arseno-bismuth weekly routine for eighteen months which we had to rely on and attempted to give a few years ago. Research work is now in progress which already shows great promise that one, two, or three massive injections will be adequate treatment. In addition the newer antibiotics are already under trial and show much promise of being even more effective than penicillin when given by mouth. We have in our hands a simple, effective, inexpensive treatment of short duration.

2. Diagnostic techniques have improved so much that one no longer has to guess whether an individual has syphilis. Neither does one have to guess as to regression or progression of the disease following therapy. A scientific tool of inestimable value was handed us in the form of quantitative serology. Its use is the only accurate method of establishing the degree of positivity of the blood and following it as it declines or rises after treatment.
3. Syphilis probably lends itself better to tracing chains of infection than any other communicable disease. Within the past few years contact tracing has developed into an effective tool in control and is becoming more effective as the public informational program expands. It can be done without embarrassment to anyone and is an essential phase of control required in every infectious case. There is no excuse for the private physician accepting a case of syphilis for treatment unless that patient first lists his sex contacts to the physician or health department interviewer.

With the foregoing facts in mind let us now consider what the control program of the future might be. It will bear repeating here that the fundamental feature of the program must be the further reduction of syphilis to the previously mentioned low level of incidence and holding it at that level thereafter. Planning for the future must also take into account that within another year or two the period of time required for treatment with penicillin will very likely be shortened and the number of required injections will be decreased to one, two, or three. Further one must consider the possibility of the newer antibiotics by mouth even replacing penicillin as the treatment of choice.

If either of these probabilities becomes a reality, it will doubtless become unwise to continue to operate rapid treatment centers. With such development, it would become necessary to decentralize the diagnostic and treatment service back into local health departments and private physicians' offices. At that time would it not be wise for private physicians to do the greater share of the diagnostic and treatment service in their private offices with the case findings and educational work being continued by local health departments? This might be done in such way that all treatment would be by private physicians with aid in some form from venereal disease control funds. This can only be done, however, if private physicians will interview every infectious case they see on a strictly private basis for contacts and give this contact information to the local health department or permit the health department to interview all such cases. In this connection let me repeat that there is no fundamental difference as regards community welfare between the private physician concealing the spirochetes in his patient and hiding a breaker of public law in his closet. Such a plan would bring treatment much closer to many patients and make it unnecessary for local health departments to keep personnel in their offices constantly when they should be doing field work. It would also make it unnecessary for the health department to do other than the essentially public health phases of control—education, case finding, and epidemiology.

I believe such a plan would be fundamentally sound, but it cannot be depended upon unless the private physician uses accurate diagnostic techniques and modern accepted treatment in addition to faithfully discharging his

duty to his community by free interchange of information with the local health department in regard to all new infectious cases and their contacts, post-treatment follow-up, etc. It cannot be depended upon without individual and collective pronouncement by physicians of their intention to do the job in such way as will actually bring control in the state.

One of the major functions of the rapid treatment centers at present is diagnosis. Diagnosis cannot be accurate without qualitative and quantitative serology on blood and spinal fluid and cell count and protein determination on spinal fluid. Good diagnosis also requires darkfield examination of lesions in addition to physical examination. There should be no treatment without good diagnosis. If and when the rapid treatment centers are discontinued and diagnosis and treatment must be done locally, the diagnostic problems of darkfield examinations must be done locally. There are very few local health departments with laboratories and few physicians' offices are equipped to do this work. Many local technicians in private offices might be trained for this task within a short period of time and meet some of the need. County health department technicians could do some of it in counties having laboratories. Technicians might be set up on a district circuit riding plan each to serve several counties at weekly intervals. Hospital laboratories could well do much of the work in the areas immediately surrounding them. All of this would require complete cooperation between local health departments, physicians, and hospitals; but is there any reason why there should not be this cooperation? At present, from 18,000 to 24,000 cases per year are being admitted to rapid treatment centers for diagnosis, treatment, and post-treatment observations. With alteration of treatment to require one to three days for treatment would make it inadvisable to continue rapid treatment center operation. This will likely come within another year or two. We must then adjust the program so that it will be continuously effective on a local basis. It can best be done with full participation of private physicians who have moral obligation to the community along with the legal obligation of the health department in securing control.

In conclusion may I state again that there can be no valid reason for failure to practically eliminate syphilis and that the responsibility for this task rests with private phy-

sicians and public health workers. Progress in developing more effective, less expensive, less toxic therapy of short duration has been marked and bids fair to progress to a point at which adequate treatment can be given in one, two, or three injections or by mouth. These changes may necessitate decentralizing diagnosis and therapy back to local communities. It is hoped that this decentralization of diagnosis and treatment can be for the large part into the private physician's office with aid from the local and state health departments. This can occur only, however, if the private physician shows sufficient concern about the problem in the community to produce along with the health department continued decline of incidence of syphilis to that hoped for very low irreducible minimum for nothing less will be satisfactory to the public. Certainly a case of infectious syphilis concerns many more people than the patient having it and the private physician treating it. There can be no place in a successful program for hiding the whereabouts of the spirochete either by the patient or the private physician. The State Board of Health and county health department personnel earnestly and sincerely desire the full cooperation of private physicians in doing the job before all of us.

DISCUSSION

Dr. Cleveland, Tupelo—Dr. Gray has presented this subject so well covering the different phases of the control of syphilis and since my ideas are so much in line with his, I do not believe that a lengthy discussion by me is necessary as it would include too much repetition. However, I hope to hear a free discussion from others.

He has shown the progress made and gave the private physicians and public health agency the credit each deserve. We have always enjoyed the splendid cooperation of the private physicians in our area. There was a time during the war years that physicians were so scarce and those left at home were not in position to take care of the mass case load of patients requiring treatment at that time. It was impossible for a physician to treat regularly for the several months required for completion of treatment. Patient holding was a serious problem for several reasons, the chief of which were, spending so much time waiting at the physician's office and the expensiveness of the treatment. But now with the simple, effective, inexpensive treatment of short dura-

tion these problems have been mostly overcome. I have observed for the past several months a gradual increase in percentages of cases treated by private physicians. This includes not only cases found by the private physician himself but those found by the health department. I anticipate the continuance of this trend in the future. I feel sure this will occur if the treatment is further exemplified by fewer injections and a shorter duration.

It is also very noticeable in our area that more physicians are showing a greater interest

in epidemiology and follow up of contact than ever before. Outside of family contacts, most likely this function will remain in the health department for reasons so obvious that it is not necessary to mention.

With the continuation of the program of education, treatment of infectious cases, the examination of contacts, no doubt this disease will be brought further under control. There is no valid or justifiable reason for the existence of this disease in the not too far distant future. I wish to congratulate Dr. Gray for the presentation of an excellent paper.

Total Abdominal Hysterectomy versus Vaginal Hysterectomy

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TOTAL HYSTERECTOMY is preferred over subtotal hysterectomy because of the possibility of the occurrence of carcinoma in the cervical stump. Other disorders in the cervical stump, such as endocervicitis, cervical polyps, erosion, eversion, etc., are a constant source of concern to the patient. Leukorrheas, possibly due to reinfection from trichomonads, fungi, etc., which lodge in the endocervix, are a source of considerable profit to the physician because of prolonged treatments often necessary but are of much annoyance to the patient.

The advances in chemotherapy and anaesthesia, with the free use of blood and blood plasma during surgery and postoperatively, has swung the pendulum farther and farther toward total hysterectomy. Mortality and morbidity rates have plummeted since the advent of better surgical training, more knowledge of electrolyte balance, the use of proteins and vitamins intravenously pre- and postoperatively.

It seems perfunctory to say that a mastery of either vaginal or total abdominal hysterectomy should be part of the equipment of any surgeon, if he is to serve the best interests of his patients. Comparison of the mortality statistics shows very little difference as regards those who prefer abdominal total hysterectomy or vaginal total hysterectomy.

The contraindications for vaginal hysterectomy are as follows: 1) large fibroid tumors of the uterus, 2) adhesions either following previous operation or pelvic inflammatory disease, 3) endometriosis, 4) large abdominal masses, 5) large, heavy retro-displaced uteri.

Vaginal hysterectomy is frequently preferable in the aged. Abdominal panhysterectomy is often poorly tolerated in the older operative group, but as a rule admirably borne if done vaginally. Prolapse and descensus of the uterus, with relaxation of the vaginal introitus, in most instances, are better handled vaginally. Repairs of large cystocele and rectocele are done with less shock if the entire procedure is done vaginally. Complete procidentia, depending on the age of the patient, are often better handled by the Manchester, Watkins interposition, Le Font, and similar types of operations. The prolapsed cervix following previous abdominal supravaginal hysterectomy is, I think, preferably handled somewhat by the Chaffin operation. Chaffin anchors the stump of the cervix through a superpubic abdominal incision, makes an incision through the posterior vaginal cul-de-sac, pulls the round ligament through this vaginal incision and sutures the ligaments. Vaginally, the anterior vaginal wall is incised and the cervix sutured to pubo-vaginal fascia, anchoring the cervix in a classical interposition operation.

We feel that the presence of large fibroid tumors, either intramural or pedunculated, are

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a contraindication to vaginal surgery. It is true that morcellation may be used in removing tumor masses, especially if we have misjudged the size of the tumor, with far less trauma than if the mass is forcefully delivered vaginally. Fibroids in the subvesical space are difficult to remove vaginally, as are intraligamentous tumors. Fibroids which have broken down or have adhesions from associated inflammatory conditions are definitely hazardous if attempted vaginally. It is suggested by some that if there is some doubt as to the extent of the adhesions, a posterior colpotomy may be done and an exploring finger determine the presence of adhesions. If other vaginal repairs are to be done, this could be considered. We favor abdominal hysterectomy in the presence of adhesions. Where the use of a Schuchart's incision is necessary to remove the uterus vaginally, in a nulliparous woman, we feel that the abdominal route is preferable.

In considering carcinoma of the corpus uteri, one must take into consideration more than size and mobility. Quite frequently a relaxed outlet makes vaginal removal relatively simple if the body of the uterus is relatively small. However, we prefer abdominal total hysterectomy, as we feel that there will be less trauma to the uterus. In performing abdominal hysterectomy for carcinoma of the corpus uteri, one may block carcinoma cells from the parametrium by way of lymphatics and blood vessels, by placing clamps along either side of the uterus before manipulation is done. If vaginal hysterectomy is done, it is much more difficult to prevent trauma to the upper part of the corpus uteri, until the latter part of the operation. A marked degree of descensus would, of course, facilitate the removal vaginally.

A total hysterectomy, by either vaginal or abdominal route, should never be done in the face of any active infection of the vulva, urethra, the suburethral glands, cervix or Bartholin glands. A careful survey of this area should always be done. The vagina should be thoroughly cleansed prior to surgery. Many surgeons routinely use penicillin preoperatively as a prophylactic measure. Operations on rectal pathology, such as hemorrhoids, fistula in ano, fissure, rectovaginal fissure and complete laceration of the perineum should not be done in the face of a total hysterectomy. We would consider these conditions as an indication for subtotal hysterectomy, if it was felt that all must be done at the same operative time. Major

abdominal surgery can not, in our opinion, be justified in conjunction with total hysterectomy except under exceptional circumstances. Prophylactic removal of chronically diseased appendix may be done without added risk, but elective gastro-intestinal or biliary surgery should not be attempted.

In a paper discussing total hysterectomy, it seems remiss not to discuss subtotal hysterectomy. Goodall has listed the disadvantages of total hysterectomy as follows:

1. Greater time expended at operation
2. Greater skill required
3. Greater blood loss
4. Greater danger to vital organs
5. Greater difficulty if the pelvic organs are fixed deeply in the pelvic cavity, or if the patients are obese

The difference in time consumed in operating is of minimal consideration as there will be a difference of 15 to 30 minutes, as a rule, to the gynecologist who has had adequate experience. In the extremely difficult case, as in the short, very obese patient with the pelvic organs fixed deeply in the pelvic cavity, the time element may play a larger part. Greater skill is required in total hysterectomy, as the ureters must be avoided and injury to the bladder guarded against. The vaginal vault must be carefully sutured to prevent postoperative bleeding, but in the usual run of cases, loss of blood is inconsiderable in either case. Ligation of tissues, as the operation proceeds, without the accumulations of large numbers of hemostats, gives much better vision and is good insurance against injury to ureters or bladder. In urging total hysterectomy, we would not be desirous of forcing this operation of the unskilled gynecologic surgeon, as we feel that it is far preferable to do a suprapubic hysterectomy well than a total hysterectomy poorly. Many surgeons feel that the subtotal hysterectomy should be done in young women who are still in the active menstrual period. They feel that the presence of the cervix has some sexual advantages. Many feel that conization or cauterization of the lacerated eroded cervix, followed by supracervical hysterectomy will adequately remove all sources of infection and decrease the incidence of carcinoma occurring in the cervix.

SUMMARY: The choice between total vaginal or abdominal hysterectomy in benign diseases of the uterus must be decided by numerous factors, some of which are the individual quotient. Individual surgeons have

their marked preferences in the surgical approaches. Any attempt to broaden the scope of the vaginal operation beyond reasonable limits, makes of it a mutilating procedure which we think transcends the rules of safe surgery. The ease or difficulty of the one or the other method in dealing with the pathology present, should affect markedly the choice. The vaginal approach where the outlet is relaxed to permit easy access, is frequently much to be preferred, especially where there are no pelvic adhesions present, the uterine pathology small and repairs necessary below. The abdominal route often offers more adequate exposure and more complete mastery of the situation, especially in the presence of inflammatory or neoplastic disease of the adnexa.

By the same token, the issue between total hysterectomy and supravaginal hysterectomy will never be completely settled. The individual surgeon must assay his ability to do either with safety to the patient. He must consider whether the greater tendency to malignancy, the greater likelihood of continued leukorrhea, etc., of supracervical hysterectomy will outweigh the more difficult, meticulous surgery of total hysterectomy with its decreased tendency to malignancy and the increased security of the patient, due to lack of fear of carcinoma. In the average hands, subtotal hysterectomy is probably far safer.

J. K. Avent (Grenada) — The vaginal hysterectomy and complete panhysterectomy, super-vaginal hysterectomy or vaginal hysterectomy require very definite indications for operation. The preparation of the patient is one of the most important

parts of the vaginal hysterectomy. You have to realize you are doing a plastic operation in the most infectious part of the body. Four hours before I do a vaginal hysterectomy I paint the vagina with tr. merthiolate. By time of operation there is a clear field. Just before operation I pull the cervix down, take the electric cautery, and destroy the cervical glands. When you begin to pull on the uterus the whole infected cervix comes down. I do this with an electric cautery before I start my operation. There is another thing to think about when you have a prolapse of the uterus. In operating these patients you have to watch the bladder. Prolapses of the cul-de-sac may often occur ten or fifteen years after hysterectomy, because you do not take off enough of cul-de-sac at time of operation. I never like for ovaries to touch after they go back into the abdomen. If ovaries over-ride each other you should remove one of the ovaries at this time. I am of the opinion if you have to do an episiotomy to have room to do a vaginal hysterectomy then a vaginal hysterectomy is contra-indicated. Every surgeon has to select the type operation best suited to the patient. With sulfa and penicillin vaginal hysterectomy mortality has dropped the same as it was with regular hysterectomy. Vaginal hysterectomy is more indicated because of less infection. Vaginal hysterectomy patients get along better and out of the hospital quicker than the abdominal hysterectomy. I don't think there is a definite line you should follow. If you have a large vagina, or relaxed tissue, vaginal hysterectomy should be done. If you have to make room to operate the vaginal hysterectomy is contra-indicated. I feel positive I have had a few cancers develop in the cervical stump. I feel sure we are not taking out as many cervixes as we should.

Tuberculosis control does not begin at the door of the sanatorium nor does it end there. After the patient has been returned to his community, many agencies—the tuberculosis association, the health department, the local welfare agency—all work together with him to get him back on his feet and to keep him there. R. D. Thompson, M.D., Bull., Nat. Tuberc. A., Oct., 1949.

Trends in Tuberculosis

C. C. SMITH, M.D.

Jackson, Miss.

IN DISCUSSING this subject we may profitably mention trends in mortality, morbidity, case finding, types of tuberculosis, treatment, and prevention.

The trend in tuberculosis mortality is definitely downward. As late as 1924 tuberculosis was in first place as a cause of death in Mississippi. In 1948 it was eighth place although it is still the greatest killer of young adults. There has been a definite shift in deaths to the older age groups, especially in the white population, due largely to the fact that our population is growing older. Most cases of tuberculosis develop in the early or middle decades of life although many of them have gone undiscovered and are now showing up in the mortality and morbidity tables of the late decades.

The mortality rates for the colored population have fallen farther and faster than those of the white population despite their unfavorable living conditions and dearth of treatment facilities. The ratio of colored to white deaths from tuberculosis has now been narrowed to two to one. Improvement in diet in recent years has no doubt increased the resistance of the negro to tuberculosis and other infectious diseases. The racial resistance of the negro is increasing each year due to continued exposure to infection and through natural selectivity or the action of the law of survival of the fittest so that his resistance is fast approaching that of the white.

In examining the morbidity figures we meet with what appears to be a paradox. While the number of tuberculosis deaths have been falling the number of new cases of tuberculosis reported each year has been slowly but steadily increasing since 1932. The fewest number of cases of tuberculosis were reported in 1931 and 1932 immediately following the change in reporting to include the name of each case.

Better and intensified case finding has beyond doubt accounted for the increase in the number of cases reported each year since 1932 up to the present time. Despite the apparent increase I am sure that there is developing each year a smaller and smaller new crop of cases. We are simply finding more of the new early cases and many old previously undiagnosed cases. Unless we are devastated by war

or our social and economic structure breaks down from some other cause this upward trend in new cases found should reach its peak soon and begin to drop perhaps almost parallel with the drop in mortality.

I believe that we are guilty of overselling the value of the chest x-ray. Some of the laity have come to believe that an x-ray is all that is needed to determine whether or not they have tuberculosis. We need to use all the means at hand in making this diagnosis. I do believe, however, that the chest x-ray is the best single means of finding early, relatively symptomless, and curable tuberculosis. Fifteen years ago there was not an x-ray machine in a single county health department; today all full-time departments have them. Fifteen years ago many counties did not have an x-ray machine. Today there is hardly a sizeable community that does not have access to a machine of sufficient power for making satisfactory x-rays and the public is demanding that they be used before their physician gives them a clean bill of health.

The case finding program of the State Board of Health has increased steadily since its beginning in 1934 up to the present. The office of the Tuberculosis Control Unit now reports on an average of 5,000 14" x 17" films made on cases, suspects, and contacts by the full-time county health departments each month. We now have four bus type x-ray units covering the state making small survey films on apparently healthy individuals fifteen years of age and above. These four units make on an average of 25,000 films per month making a total of 30,000 films per month seen in this office. These survey films yield 0.5 per cent tuberculosis or one case out of each 200 persons x-rayed. In addition we find some heart disease, tumors, abscesses, and other chest abnormalities.

Occasionally we are called upon to defend our expanded case-finding program. Frequently we are asked, "Why find more cases of tuberculosis when we already know about more cases than can be properly treated?" Our answer is that it is very worthwhile to know who and where the cases are even though they can not be adequately cared for. I am thoroughly convinced that most tuberculosis

is spread by the unknown rather than by the known case. Around the known case some precautionary barriers can be instituted which will tend to reduce the number of secondary cases. It is true that all active cases should be hospitalized, but until sufficient beds are available these cases must be treated in the home and some of them will get well. We see evidence every day of healed tuberculosis in individuals who never knew or suspected they had the disease.

At present only pulmonary tuberculosis is a real problem in Mississippi. Lupus and scrofula are now medical curiosities. Unless we relax our efforts for controlling bovine tuberculosis and pasteurization of milk, bone and joint tuberculosis should never again be a real problem.

Within the span of our memories the treatment of tuberculosis has come all the way from, "going west", gorging on raw eggs and sweet milk, sunbathing, and living the strenuous outdoor life to the present era of the antibiotics. Rest in bed remains the basic treatment for pulmonary tuberculosis. Not too many years ago rest was about all we had. Cases were put to bed and they stayed there and sweated out a cure or rebelled and died.

In streptomycin we now have a wonderful adjunct to other types of treatment. There are definite indications for its use. There are times when it definitely should not be used. We know that the tubercle bacillus will develop a streptomycin-resistant strain following the prolonged use of this substance. As production of this antibiotic goes up and the price comes down, I am genuinely afraid that much of it will be used when it would have been much better to have poured it down the drain.

Today with improvements in surgical techniques and with streptomycin to help prevent postoperative spreads and wound infection, the

surgeon is allowed to remove lungs, lobes of lungs, and even segments of lobes with excellent results. This surgical removal of irreversibly damaged lung tissue plus the old standbys, pneumothorax, phrenic nerve interruption, pneumoperitoneum, and thoracoplasty gives us an extremely valuable surgical armamentarium.

Finding cases early, rest, surgery when indicated, streptomycin when indicated, and perhaps other antibiotics of chemotherapeutic agents to come, are tools with which we are able to salvage many useful lives.

To date prevention of tuberculosis has consisted largely of education, finding cases early before they have become a menace, arresting as many of the active cases as possible, isolating so far as possible the cases who could not be arrested, and instituting precautionary measures for those who must come in contact with the known active case.

Based on work done elsewhere and experimental work being done in this country now, I hazard a prediction that within a few years we will be vaccinating against tuberculosis with B.C.G. vaccine. This vaccination will likely be done on only tuberculin negative members of highly susceptible groups as the negro and the American Indian and groups who are unduly exposed such as medical students, student nurses, nurses' aides, etc. This vaccination apparently affords some degree of immunity to subsequent infection with the tubercle bacillus.

Suppose we should learn nothing new about this devilish bug from now on. Our present knowledge should enable us to conquer this plague. Some man should be able to stand before this group within the foreseeable future and say, tuberculosis is not a social, economic, or public health problem in Mississippi. But between today and that day we all have a job to do.

It is increasingly clear that screening the general population for tuberculosis must be combined and coordinated with other screening programs for other important pathological conditions—such as cardio-vascular disease, cancer, syphilis, and diabetes—similarly characterized by relatively long subclinical periods in which detection may be life conserving or important to community protection. James E. Perkins, M.D., Bull. Nat. Tuberc. A., Jan., 1950.

Laryngofissure—An Important Aid in Diagnostic Problems*

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IT IS NOT the purpose of this short paper to present a review of the literature regarding the various aspects of the operation known as laryngofissure or thyrotomy. Neither is it intended to discuss the various technical details of this surgical procedure. Instead, it is my intention to emphasize, or rather, re-emphasize the fact that in case of doubt laryngofissure can be safely and, in fact, simply performed to establish a definite diagnosis. In many cases it can accomplish complete correction of the condition without additional surgical procedures. It is not intended to suggest that this procedure should forego careful indirect and direct laryngoscopic examination. However, we are all familiar with the rather large percentage of cases in whom mirror examination is not entirely satisfactory regardless of the use of local anaesthesia to the pharynx and hypopharynx because of the psychological factors producing gagging and spasm. Although we may get numerous fleeting glimpses of the larynx, a careful study of the laryngeal structures is not obtained. Again it should be said that this is probably the case in only a minority of patients examined but that it is this group in which a clear view into every nook and cranny of the larynx is most important.

It is in these patients that many malignancies are overlooked because a fleeting glimpse is interpreted as a negative finding. In such cases then, a direct laryngoscopy becomes a "must" regardless of the hesitancy which we must all feel at times to suggest further suspense and expense to the patient. In the larger, completely equipped and excellently staffed clinics with trained operative teams, direct laryngoscopy will solve most of these problem cases. However, all of the invaluable diagnostic equipment perfected by such men as Drs. Jackson, Hollinger, Lynch and LeJeune is not available to otolaryngologists in all the smaller cities. As a result an inadequate direct laryngoscopy may be accepted because financial or social conditions,

or more frequently, the optimistic attitude of the patient may bring an end to his examination at this point. In such cases a well trained otolaryngologist who is performing surgery regularly can perform a laryngofissure with little or no special equipment. By the same token, an anaesthesiologist or especially trained anaesthetist is not required since local anaesthesia is in most if not all cases much safer and actually simpler. It is not suggested that laryngofissure should be performed in lieu of direct laryngoscopy, but rather that if the latter is not entirely satisfactory, or in the event that there is a serious discrepancy between the clinical picture and the findings obtained by direct laryngoscopy, then laryngofissure should be given serious consideration. This procedure is by far safer for the patient than a period of hopeful waiting if there is the slightest doubt.

We are all familiar with the short, thick-necked individual with receding chin upon whom adequate direct laryngoscopy is exceedingly difficult if not impossible. It is often no less difficult using general anaesthesia or combined local anaesthesia with intravenous sodium pentothal and curare. It seems that most problem cases are of this anatomical make-up and of course if this were not the case they would most likely not be problems. In such instances four-fifths of the larynx may be seen well but if that last fifth can not be seen clearly, the entire examination has been a wasted effort and an imposition upon the patient. It is of course understood that the above facts do not apply to the routine laryngeal examination but rather to those cases in which subjective and/or objective symptoms or signs suggest probable laryngeal pathology.

If, then, indirect and direct laryngoscopy fail to reveal the diagnosis beyond the shadow of a doubt, it seems reasonable that laryngofissure should be performed immediately for close inspection of the lesion and removal of tissue for frozen section, several sections being studied if necessary. Certainly it does not seem that a carefully performed laryngofissure is any more formidable a procedure than an exploratory laparotomy. This may not have

* Read before the Section on Eye, Ear, Nose and Throat at the eighty-first annual session of the Mississippi State Medical Association, Biloxi, Miss., May 11-13, 1949.

been true prior to the development of the antibiotics which have greatly reduced the danger of perichondritis, mediastinitis and similar complications. The general surgeon who is unable to establish a definite diagnosis in cases of obscure abdominal pathology does not hesitate to recommend laparotomy. In the present state of advancement in thoracic surgery, exploratory thoracotomy is not uncommonly performed. The fact that the primary air passage is involved in laryngofissure presents no serious contraindication when the question of cancer is involved. Preliminary or simultaneous tracheotomy is easily performed if necessary and decanulation can be accomplished within a few days. Another point for objection is the possible effect upon the voice and yet this presents no real problem. A carefully performed thyrotomy should not exert undue effect upon the voice unless an appreciable portion of a vocal cord is removed, in which case a change or partial loss of voice is the less of two evils. It should be remembered also that in such cases the patient certainly has an abnormal voice prior to surgery. In any event I believe an individual would prefer a loss of voice or defective voice to the torture of certain slow death from malignancy of the larynx.

If laryngofissure is decided upon and the larynx opened, one may, according to the pathological report of frozen section, remove a benign lesion with the utmost accuracy, remove one vocal cord in the case of an early, well-defined and satisfactorily situated malignant lesion, or perform total laryngectomy in case the latter is indicated. Again one might argue that in case the lesion is inoperable, laryngofissure has been detrimental; however, I do not believe that such a case would come to this operation, but would easily be recognized on direct if not indirect examination of the larynx.

I would like to report two cases which illustrate quite well the idea conveyed in the foregoing paragraphs.

Case I. Mr. R.D.S., a 71-year-old white male who was first seen in the Central Medical Tumor Clinic on 1-7-49. He stated that he had chronic hoarseness for ten to twelve years with no associated symptoms. In the past four months the hoarseness had become progressively worse until he was able to talk only in a loud whisper. One month prior to admission he began to have difficulty in swallowing and had swallowed only liquids for two

weeks. There had been rapid weight loss for at least one month but practically no pain. His difficulty in swallowing apparently was due to "strangling" rather than pain or obstruction. His past history was non-contributory although he had been practically an invalid from lumbago for eight to ten years. General physical examination was entirely negative except for marked limitation of motion of the left hip joint and lower spine. Laboratory studies including serology were negative. Indirect laryngoscopy performed in the clinic revealed a large apparently fungating mass involving the entire right vocal cord and extending into the anterior commissure. It was noted, however, that the mass tended to rise and fall with respiration as though attached by a rather narrow base which could not be seen. There did not appear to be any spilling over of the lesion into the pyriform fossae. A tentative diagnosis of "laryngeal polyp with malignant degeneration" was made. On 1-11-49, under local anaesthesia, a direct laryngoscopy was performed. As a preliminary step, a Jackson esophagoscope was carefully inserted into the upper esophagus and no evidence of ulceration or erosion was seen. Three specimens were then taken from the laryngeal mass with cup forceps and manipulation revealed that the tumor was attached along the entire length of the right vocal cord but was not firmly fixed. The prognosis seemed more favorable than on first examination. The biopsy report read: "Inflammatory polyp of larynx; no evidence of malignancy."

The problem then arose as to the next procedure to be carried out. Certainly in the face of this biopsy report, suspension laryngoscopy for removal of the entire lesion seemed indicated and yet the possibility of deep-seated malignant degeneration raised a question. Since this patient was a very large man and a correspondingly large spatula for the Lynch suspension apparatus was not immediately available, it was decided that laryngofissure would be the most accurate method for further examination and removal of the lesion. Consequently, a few days later this procedure was performed under local anaesthesia, the laryngeal cartilage being divided with a motor-driven circular saw and the larynx opened in the mid-line. Upon inspection it seemed evident that the lesion was a benign one since only the mucosal layer of the right vocal cord was involved and the entire mass could be stripped from the cord by blunt dissection.

Frozen section done immediately showed no evidence of malignancy. There was no indication for further surgery and the larynx was closed routinely. It was not deemed necessary to perform a tracheotomy. A nasal feeding tube was inserted and the patient ordered to maintain strict silence. Serial sections of the tissue removed revealed no evidence of malignancy and the final pathological diagnosis was as follows: "Laryngeal polyp due to inflammation with cystic degeneration." Postoperative recovery was uneventful and the patient was discharged seven days later to remain on a silence régime for one month. He was seen three weeks later showing only moderate edema and hyperemia of the right vocal cord; he had broken the silence régime because he found that his voice was nearly normal for the first time in ten years. This case, of course, seems to illustrate over-cautiousness yet this seems justified in the face of the history, age of the patient, and physical findings.

Case II. Mr. T.T.G., 54-year-old white male first seen at the Jackson Veterans Hospital where he was admitted for examination regarding "chronic stomach trouble." During routine examination the patient stated that he had been troubled with a postnasal drip and some hoarseness for a month or two. He was referred to the E.N.T. Clinic for examination on 3-23-48 and the following consultation report was made: ears, nose and nasopharynx - negative. Larynx - fairly well visualized by indirect laryngoscopy. There is a definitely small, chalk-white papillary projection on the subglottic surface of the right vocal cord at about the junction of the anterior and middle thirds. This lesion is very difficult to see by this method and it is advised that direct laryngoscopy be performed at an early date for further study and possible biopsy. Diagnosis: 1) tentative, papilloma, right vocal cord; 2) no sinusitis found. Recommendations: direct laryngoscopy and biopsy at an early date. The patient was returned as requested and on 4-5-48 a direct laryngoscopy was performed and the following operative notes recorded: Pathology - the small pearly white tumor mass which was previously described on indirect laryngoscopy was visualized through an anterior commissure laryngoscope and seen to be attached to the inferior surface of the right vocal cord. This tumor was almost completely hidden by the vocal cord and was seen in the glottic aperture only on forced inspiration. Its medial attachment appeared to be on the phonating

surface of the cord and extended inferiorly and laterally into the subglottic area. Procedure - Through a Jackson anterior commissure laryngoscope the right vocal cord was retracted laterally as well as possible and the above described tumor mass grasped with cup forceps and severed from the inferior surface of the vocal cord. A small portion of the mucosa of the vocal cord was included with the tissue removed. The remaining edges were trimmed as carefully as possible with the same forceps. The remaining free edge of the vocal cord appeared to be clean after this procedure, and slight notching of the cord was noted. All tissue was sent to the laboratory for examination.

Two days later the patient became intoxicated in the hospital and was discharged for disciplinary reasons. On the following day the pathologist reported the tissue removed as early squamous cell carcinoma and upon questioning, stated that the entire lesion was apparently removed. The patient was immediately recalled to the hospital. Direct laryngoscopy was repeated and only slight edema of the right vocal cord could be seen with no evidence of tumor mass being detected. It was felt however that since the growth had been removed from the inferior surface of the cord laryngofissure should be performed, and removal of the vocal cord was contemplated. Consequently, on 2-28-48 a preliminary tracheotomy was performed using local anesthesia. There was no untoward reaction to this procedure and two days later the patient was prepared for laryngofissure. Upon opening the larynx a careful study was made and, surprisingly, the site of the previous biopsy could not be identified. No evidence of new growth could be seen and a serious problem arose: Should further surgery be performed or omitted? The decision was in favor of excision of the cord and this was done removing tissue well above and below the cord including the inner perichondrium of the larynx. The cord was detached at the vocal process by means of a tonsil snare. Routine closure was accomplished. Serial sections of this tissue showed no evidence of malignancy which seemed to indicate that the original operation for biopsy had completely removed the new growth. The original sections were then reviewed and the diagnosis of carcinoma substantiated. This patient made an uneventful recovery and has been followed a year. He has only a fair voice but there is little question in the minds of all concerned that he will not die of carcinoma

of the larynx. Had laryngofissure not been performed there could have been no assurance for the patient or the surgeon even though it appears now that simple removal for biopsy may have been sufficient. This patient is entirely happy and not in the least worried about his prognosis which in itself is an important factor in such cases.

In summary may I say that I fully realize that a relative newcomer to otolaryngology should not "stick his neck out" too far, and yet one can hardly refrain from advocating certain points if they are in the interest of safety to the patient, not too radical, and may afford more sense of security to the physician. This paper is intended to emphasize:

1. That mirror laryngoscopy should not be the final word unless there is NO question that every portion of the larynx has been seen.

2. That because direct laryngoscopy has been performed, the problem has not been solved unless the larynx has been completely visualized in a "relaxed" state.

3. That laryngofissure is a relatively simple

procedure in the event the above two requirements are not fulfilled.

4. That laryngofissure is not a radical procedure when there is reasonable doubt as to the presence or absence of cancer.

DISCUSSION

Dr. LeJeune (New Orleans)—I listened with much interest to Dr. McArthur's presentation and, while I do not concur in all of his views, I think the idea of an exploratory laryngofissure for diagnostic purposes provides food for much thought. So far, however, it has not been necessary for me to do a laryngofissure operation for diagnostic purposes; however, I can conceive of some cases in which it might be advisable. I must disagree with Dr. McArthur when he states that laryngofissure operations are simple surgical procedures. Once the continuity of the thyroid cartilage is disturbed the infralaryngeal lymphatics may find easy access to the cervical region and early metastasis may occur in subsequent cases of malignancy of the larynx, and I have also seen some serious complications occur following laryngofissure operations.

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NO REGISTRATION FEE

Approaching Crisis

Stat Presented as Trichomonacide

J. T. WEEKS, M.D.
Jackson, Miss.

VIRTUALLY all doctors are seriously concerned about any condition or disease which threatens health and happiness. It is our obligation and sacred duty to recognize health hazards to overcome them when possible.

The nature of a disease determines to a great extent the interest manifested by the public. The more freely discussed and the more sensational the disease, the greater is the determination of all that something be done. A disease which people hesitate to talk about, even though it be rampant and disastrous in its ramifications, rarely arouses public sentiment and is, therefore, difficult to combat.

Millions of women are victims of potentially serious, but hush! hush! disorders, wherein nothing is said and but little is done. I refer specifically to the disorders caused by the parasite, trichomonad. This disorder, even when uncomplicated, is most distracting and obnoxious. We know the trichomonad frequently causes severe and prolonged irritation of the vagina and cervix, furnishing a fertile field for numerous types of infection, the complications of which are serious. We believe prolonged irritation predisposes to malignancy. Who, then, can say that the trichomonad is not contributing to cancer of the vagina and cervix?

A conservative estimate places the number of cases of *Trichomonas vaginalis* vaginitis in the United States at 10,000,000. Quoting a prominent gynecologist: "The generally accepted treatment for *Trichomonas vaginalis* vaginitis requires two or three office treatments per week by a physician. This treatment should be kept up for a period of six weeks to three months—sometimes longer".

Assuming fifteen treatments would cure all cases of *Trichomonas vaginalis* vaginitis, it would take 20,000 doctors, treating fifteen patients each day, almost one and one-half years to treat the 10,000,000 women who at present have the *Trichomonas* infection. This does not take into consideration any new cases, neither the many who are sure to have a recurrence. It is obvious then, that a more simplified and effective treatment is urgent.

Since *Trichomonas* infection is increasing rapidly, unless a simple and effective treatment

and preventative which can be used routinely for feminine hygiene is made available to all women, 25,000,000 cases may be anticipated within the next few years. Many of these women, in addition to the embarrassment and discomfort which they will surely suffer, are certain to develop serious complications. We should not regard a disorder so widespread and disabling with indifference.

The time required of busy doctors in treating *Trichomonas vaginalis* vaginitis, which could be self-treated and allow time for those whose complaint or disease demands their services vastly more, is deplorable. But tragic is the fact that only a small percentage of these millions of women ever consult a doctor, instead resorting to irritating and ineffective douche preparations which are often harmful in an effort to get mental and physical relief. Less tragic, but shamefully true, are the many homes that are disrupted as a result of an infection, apparently the fault of no one, but which can be simply and economically relieved and prevented.

The experience of many doctors, over a period of several years, has demonstrated that a vaginal douche with stat, one teaspoonful to the quart of water, used night and morning for ten days, will, in most cases, free a woman of all clinical symptoms of *Trichomonas vaginalis* vaginitis, and the trichomonad cannot be found in a smear. The continuation of a douche with stat, once or twice per week, will usually keep her free of the parasite. Doctors are also gratified with results obtained through the use of stat douches in the treatment of the general run of non-specific vaginitis and cervicitis.

Stat is a formula composed of vegetable oils and glycerine, proportioned and compounded in a manner that, when mixed with water, it forms a soothing, oily emulsion. It contains highly refined oil of pine, vegetable oil soap, glycerine, camphor and oil of eucalyptus. The use of stat by women over long periods has proved that it is not irritating and its frequent use does not interfere with the normal vaginal secretion.

In fairness to the millions of women who are victims of *Trichomonas vaginalis* vaginitis, the medical profession may well encourage the use of

an effective and harmless feminine hygiene formula which, in addition to its virtue as a vaginal douche for general use, will both relieve and prevent *Trichomonas vaginitis*. Its consistent use will do this in almost all cases.

DISCUSSION

Dr. B. L. Pentecost (Memphis, Tenn.) — I have been prescribing stat for over a year and have found it most satisfactory from a general practitioner's viewpoint.

Stat, in addition to being an excellent trichomonacide, has proved to be a good all-purpose douche. I have found it effective in many cases of erosive cervicitis. It has been gratifying to see the good results in *Trichomonas* infections and especially *Trichomonas* complicating pregnancy. I have repeatedly questioned the patients who have been treated for *Trichomonas* by other methods, and in almost every instance the opinion was that stat was much more effective.

Dr. D. T. Brock (Jackson)—Case Report—Mrs. K. D. G. was first seen on July 25, 1947, and was about seven months pregnant. She gave a history of severe cervicitis caused by *Trichomonas* infection. She had been treated over a long period of time by her local physician with a well-known powder insufflation and insert at night.

When examined by me she was badly swollen and irritated with a severe copious irritating discharge loaded with *Trichomonas*. She was advised to use douches night and morning of stat, one teaspoonful to a quart of water. This gave her almost immediate relief and on July 30, 1947, her vaginal smear was negative for

Trichomonas and she had only a normal amount of vaginal discharge.

She was delivered on September 13, her episiotomy incision healed perfectly and she was discharged from the hospital five days later in good condition.

I have closely observed the clinical results obtained through the use of stat for more than three years.

As a treatment for the usual discharges, and more especially the severe irritating discharges caused by the *Trichomonas* infection, I have found stat most helpful and beneficial. The fact that it can be used often and over a prolonged period without irritation or damage lends itself advantageously in *Trichomonas* infections where treatment is necessarily a prolonged affair.

Dr. K. O. Stingily (Meridian)—The following is a case which I had in the office which should prove interesting. Approximately six months ago I had a white female, multipara, referred to me by Doctor R. She complained of a bloody discharge from the vagina, duration approximately three weeks. On physical examination a rather large ulcer was noted on the upper lip of the cervix which I suspected of being malignant. A biopsy was taken and at the same time the patient was instructed to use stat in double strength, (two teaspoons to a quart of water), as a douche b. i. d. The biopsy was negative for malignancy but showed a very heavy *Monilia* infection. On her return in three weeks for a check up she was entirely clear, no other medication used.

I have used stat for three and one-half years with very gratifying results in both regular and double strength.

As a result of intensive studies during the past few years, evidence has accumulated which suggests that histoplasmosis—formerly believed to be a rare and usually fatal disease—also exists as a mild asymptomatic syndrome which is very prevalent in certain parts of the world. Although quite typical cases of clinical histoplasmosis are probably much more frequent than previously thought, the principal significance of the asymptomatic form is that in certain respects the disease so closely resembles tuberculosis as to be frequently confused with it. Michael L. Furcolow, M.D., Pub. Health Rep., Nov., 1949.

Common Intrathoracic Lesions*

J. HARVEY JOHNSTON, JR., M.D.

and

GEORGE E. TWENTE, M.D.

Jackson, Mississippi

PART I

IN 1933, Graham performed the first successful pneumonectomy for carcinoma of the lung. Since this time remarkable progress has been made in the development of surgery within the chest. With proper facilities it is now as safe to do an exploratory thoracotomy as it is to do a laparotomy. This safety of thoracic surgery is largely due to crystallization of ideas of thoracic physiology and advances in anesthesiology. The protection of the antibiotics, intelligent use of whole blood prior to and during surgery and improvements in surgical technique are of unquestionable value in lowering the morbidity and mortality in chest surgery.

The advances in the realm of thoracic surgery have provided palliation and cures for diseases which only two decades ago were considered hopeless. It thus becomes the duty of the family physician to be more alert in diagnosing diseases of the chest.

The following symposium of typical cases is presented to emphasize important points of therapy in relatively common intrathoracic lesions of surgical significance. Despite its increasing importance, carcinoma of the lung has been intentionally excluded as it has been adequately stressed in the recent literature.

Organized Hemothorax

Organized or clotted hemothorax occurs in five to ten per cent of the hemo- or hemopneumothoraces resulting from penetrating thoracic wounds. The wide experience of the military thoracic surgeons in the last war has shown that the policy of no or infrequent aspiration practiced by so many civilian surgeons disregards two of the established concepts of wound healing: (1) débridement or evacuation of devitalized tissue and (2) obliteration of dead space. Although 90% of hemothoraces will ultimately resolve, one invites prolonged morbidity and serious complication in the form of infection (empyema) or diminution in pulmona-



Figure 1

ry function from a fibrothorax (Fig. 1) with a policy of inactivity. Early aspiration is indicated in all cases in which there is a significant accumulation of blood within the pleural space. The danger of initiating secondary bleeding by aspiration has been greatly over-emphasized, as has the risk of introducing infection into the pleural space by thoracentesis. Air replacement at the time of removal of the blood from the thorax is contraindicated as it probably increases the incidence of empyema by delaying expansion of the lung.

A chronic, organized hemothorax is not reducible by thoracentesis. This is readily understandable when one considers the pathology (Fig. 2). The lung is maintained in a state of marked collapse by a well-defined fibroblastic membrane or peel which completely encases the lung preventing its re-expansion and lines the diaphragmatic and parietal pleura. Contained within this fibroblastic sac are large masses of

*Presented at Mississippi Chapter of American College of Surgeons, September, 1949.

ORGANIZING HEMOTHORAX

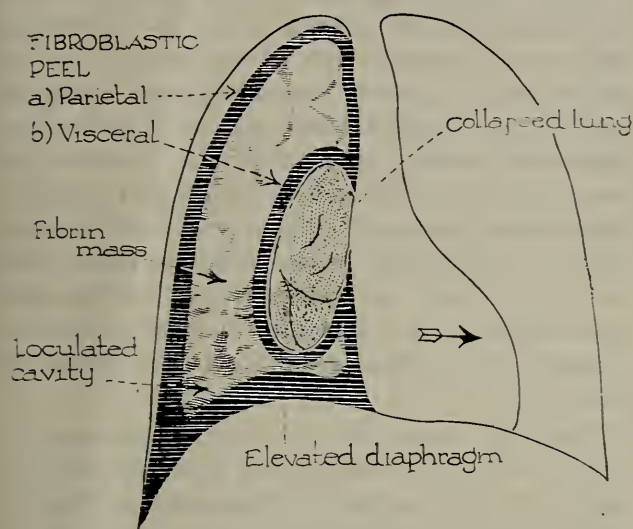


Figure 2

organizing fibrin which divide the pleural space into a series of loculated cavities. These cavities contain varying stages of liquid and solid blood clot. Frank pus is not infrequently found between the fibrinous masses. Secondary infection is often a complication as contamination is usually present and the clotted blood serves as excellent culture medium.

Only a few years ago the recommended mode of therapy in infected, organized hemothorax would have been rib resection with open drainage. This would have resulted in months of morbidity from prolonged suppuration and drainage and in serious impairment of pulmonary function. Often obliteration of the empyema cavity did not occur, and various procedures, such as the Schede thoracoplasty, allowing collapse of the thoracic wall became necessary. Certainly, this therapy does not compare favorably with early thoracotomy and decortication; in which concepts repeatedly proven in other types of wounds (debridement and obliteration of dead space) are featured. Maximum return of function is accomplished by removing the investing membrane. Such a concept is not a new one but did not become popular until the advent of the various chemotherapeutic and antibiotic agents to prevent invasive infection and our more liberal use of transfusion therapy in avoiding acute and chronic shock and promoting early wound healing. Decortication is a major procedure but its safety was repeatedly shown during the war when 1500 early decortications were done with a mortality of less than two per cent.

Case Report: R.S., a 24 year old colored male was struck in the right side by a passing auto-



Figure 3

mobile. Immediate injury was apparently not severe. Two weeks later he began to have pleuritic pain in the right chest associated with dyspnea, chronic nonproductive cough and fever. One week later he was admitted to the hospital in obvious respiratory distress. The right chest was splinted, dull to percussion and presented only distant bronchial breathing. The temperature curve was of the septic type, spiking daily to 102° or 103°. The pulse rate averaged 110. Blood count on admission revealed a mild anemia with 70% hemoglobin and a leukocytosis of 24,000 with 89% polys. X-ray of the chest (Fig. 3) revealed increased density throughout the right hemothorax with several translucent areas suggesting cavitation. Repeated thoracenteses were done but uniformly yielded only a small amount of thin serosanguinous or turbid material containing large flecks of fibrin. Although several trials were made with large bore needles, it was obviously impossible to empty the right pleural space by aspiration. Culture of the aspirated pleural fluid revealed nonhemolytic *Staphylococcus aureus*. A tentative diagnosis of clotted right hemothorax with superimposed infection was made.

After careful preoperative preparation, utilizing liberal amounts of blood to restore normal

blood volume and penicillin to prevent invasive infection, decortication under endotracheal anesthesia was done through a right posterolateral thoracotomy incision overlying the seventh interspace. After completely evacuating the liquid and semisolid contents of the right pleural space, the lung was visualized as a collapsed structure immediately adjacent to the mediastinum. Even with positive pressure the anesthetist was unable to expand the lung due to the fibroblastic peel which encased it. This membrane was easily removed after establishing a plane of cleavage allowing full expansion of the right lung to fill the right pleural space. Anterior and posterior catheters were inserted and connected to a suction apparatus. An anterior catheter was removed in 36 hours and the posterior in 96 hours. Penicillin was continued postoperatively. Convalescence was entirely smooth and the patient was discharged from the hospital on the tenth postoperative day. Chest plate (Fig. 4) two months later revealed no abnormality except for slight flattening of the right diaphragm. The right lung was completely expanded and the right pleural space free of fluid.

Comment: The cause illustrates the lessened morbidity and early rehabilitation with maximum pulmonary function afforded by decortication in post-traumatic empyema.

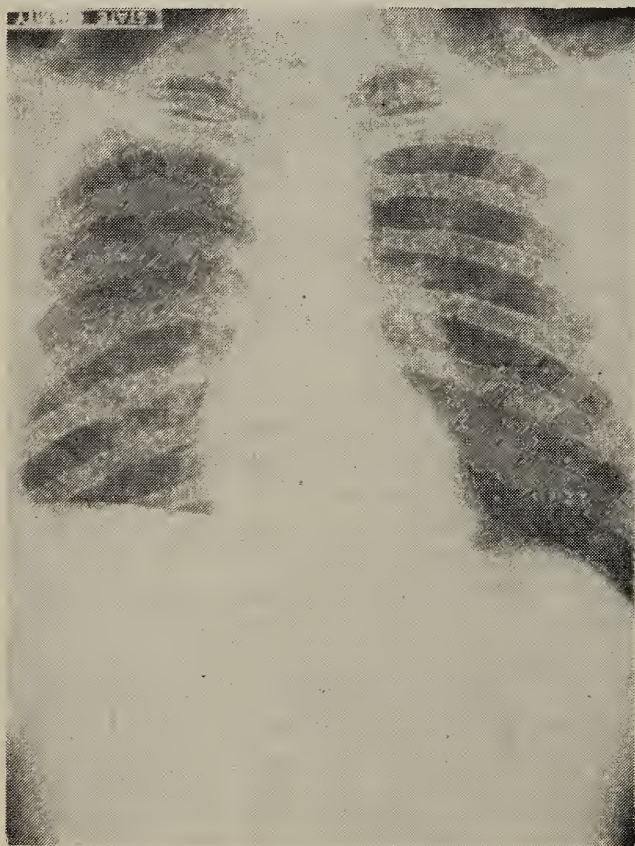


Figure 4

Chronic Lung Abscess

Lung abscess remains one of the most difficult intrathoracic lesions to treat. These abscesses are usually due to aspiration and not infrequently follow oropharyngeal surgery, particularly tonsillectomy and tooth extraction. Bronchial obstruction should be excluded by bronchoscopy in all cases. Although repeatedly emphasized, it is still not appreciated that one-fourth to one-third abscesses occurring after the age of forty are secondary to bronchogenic carcinoma. It is especially hazardous to treat chronic lung abscesses in this age group expectantly.

Although there is diversity of opinion, we believe that early acute lung abscess should be handled conservatively. Treatment during this stage must be strenuous if cure is to be expected and complication avoided. Early diagnosis is important as much of the success of a medical régime depends upon early institution of adequate therapy. As multiple organisms are usually abundantly present, penicillin and streptomycin should be administered in large doses parenterally and by aerosol nebulization. Bronchoscopy is indicated not only to rule out bronchial obstruction but is occasionally valuable in establishing bronchial drainage of the abscess. Particular attention should be paid to postural drainage. Study of appropriate x-ray films will determine the optimal position to insure good drainage.

If the patient fails to improve from medical therapy within several weeks, surgical drainage should be seriously considered to avoid excessive destruction of the lung tissue, spread to the pleura with resultant empyema and metastatic brain abscesses, which are heartbreaking complications and almost uniformly fatal. Great care must be exercised in localizing the pulmonary abscess before drainage is attempted. The injection of minute amounts of lipiodol and methylene blue is of value in careful fluoroscopic localization. Drainage must be done through an area of obliterated pleural space to avoid an overwhelming empyema.

The treatment of chronic lung abscess is surgical. Few cures will be obtained by medical treatment in the chronic stage of the disease because of the underlying pathology. The cavity of a chronic lung abscess is usually multilocular, markedly thickened from fibrosis and occasionally presents a lining of epithelium. Conservative measures are important in overcoming the superimposed infection but cannot restore anatomic normalcy. Pulmonary resec-

tion, usually lobectomy, is the treatment of choice at this stage of the disease. External drainage will cure some patients but it's too often unsuccessful because of secondary bronchiectatic and fibrotic changes. There should be less hesitancy in advising surgery in chronic lung abscess for this has become much safer due to the various antibiotic agents preventing invasive infection and the refinements of operative technique which have substantially lowered morbidity and mortality.

Although the role of the anesthetist is an important one in all phases of thoracic surgery, his is a particularly important role in chronic lung abscess for the patients are seriously compromised by the chronic sepsis and the thick bronchial secretions must be constantly aspirated to prevent anoxia, spread to the opposite side, and even death. In this particular case there is no question that the anesthetist played the major role in saving the child's life, for he was obviously drowning from the brisk intra-bronchial hemorrhage.

Case Report: O. J., 12-year-old colored male, had a rather severe pneumonia which did not respond readily to penicillin and sulfa drugs in October, 1948. One month after onset of the illness frank pus was aspirated from the right pleural space and an intercostal catheter was placed for drainage at another hospital. This

afforded improvement and the patient was discharged. For the last five months he has had recurrent bouts of fever associated with chills and pain in the right chest. Each of these acute episodes has been improved by penicillin and sulfa but the patient has continued to produce large amounts of thick, foul smelling sputum. Hemoptysis was infrequent at the onset but has been quite alarming on several occasions during the last two months. There had been a thirty-pound weight loss.

We first saw the child seven months after the first pneumonic process. At this time he was obviously acutely ill, with fever ranging from 100° to 102°, respiratory distress on slight exertion, chronic productive cough and pain in the right chest. There was a rather marked secondary anemia and a leukocytosis of 26,300 with 87% polys. X-ray of the chest (Fig. 5) on admission revealed opacity of the right lower lung field with several areas of translucency and a fluid level below the ninth rib posteriorly. The left lung was negative. A clinical diagnosis of chronic multilocular lung abscess was made. Bronchoscopy revealed no intrinsic or extrinsic lesion producing obstruction to the right lower-lobe bronchus. The bronchus itself was filled with thick mucopurulent material and lined with friable granulation tissue which bled with minimal trauma. Preoperative preparation was made difficult by the repeated hemoptyses. Penicillin by the intramuscular and aerosol inhalation routes was given to overcome the superimposed infection.

Two weeks after admission surgery was done. After anesthetization the patient was bronchoscoped to clear the tracheobronchial tree of secretion. During this procedure brisk bleeding occurred and the patient became cyanotic and markedly dyspneic. Our first thought was to defer surgery but the bleeding was so marked that a rather heroic lobectomy was done. The usual posterolateral incision overlying the fifth interspace was rapidly made and a tourniquet placed about the hilum of the lower lobe to stop the bleeding. The operation was then temporarily suspended while the anesthetist cleared the tracheobronchial tree of blood and established an adequate airway. The patient's condition became markedly improved and a right lower lobectomy with individual ligation of the hilar structures was done. The bronchial stump was carefully repleuralized and 300,000 units of penicillin instilled into the chest, which was closed in layers after catheters

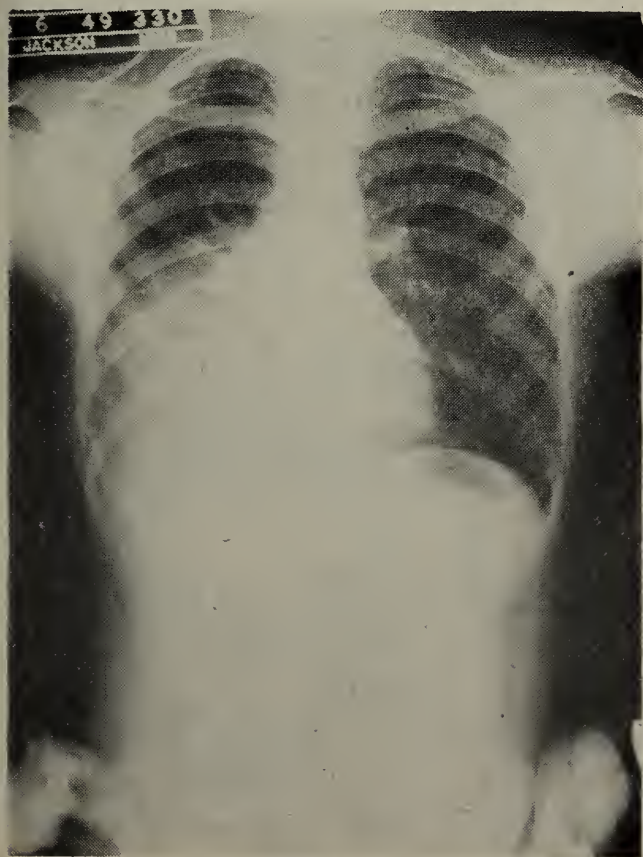


Figure 5

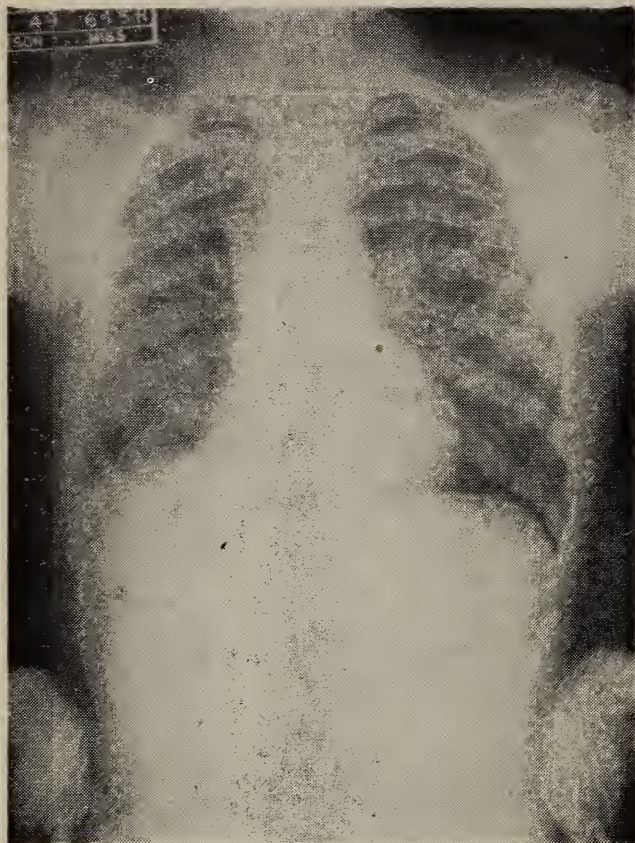


Figure 6

had been placed anteriorly and posteriorly for closed drainage. Postoperative convalescence was fortunately smooth. Chest film (Fig. 6) 2½ months later shows that the right pleural space has been completely filled by the right upper and middle lobes. The child has regained his original weight and is entirely symptom free.

The importance of transfusion therapy is dramatically emphasized in this patient in which five pints of blood were used for preoperative preparation and seven pints of blood were given during and immediately after the operative procedure.

Comment: Although conservative therapy is the one of choice in the acute stage of lung abscess, surgical extirpation provides maximum chance for cure in the chronic stage. Deferring surgery in chronic lung abscess invites excessive destruction of pulmonary tissue, empyema, pericarditis, and metastatic cerebral abscesses.

Mediastinal Cysts and Tumors

Although mediastinal tumors were once regraded as rare lesions, they are being discovered more frequently as roentgenologic examination of the chest has become more common. When first detected, mediastinal lesions are usually asymptomatic. In the past the usual policy was to "observe" these asymptomatic

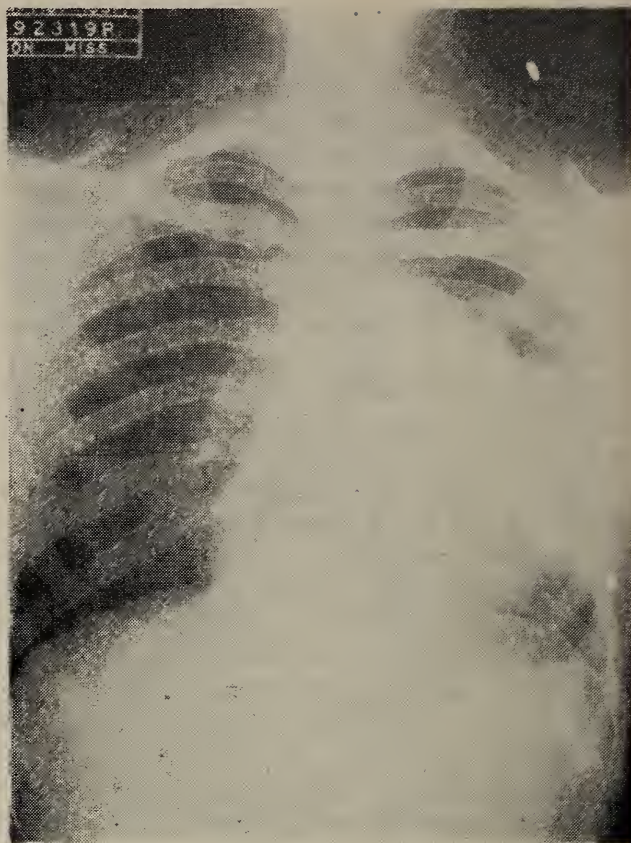


Figure 7

mediastinal masses. At the present time the danger of surgically exploring the mediastinum is so small that a policy of "watchful waiting" is to be strongly condemned. **All tumors of the mediastinum are potentially malignant.** At the time of exploration approximately one-fifth are actually malignant. Even the benign tumors can produce death or marked incapacitation from pressure on the numerous vital structures closely grouped in the mediastinum. We have learned the folly of observing undiagnosed tumors of the breast, abdomen and extremity. Exploratory thoracotomy is almost as safe as exploratory laparotomy and should be recommended without hesitation for all circumscribed intrathoracic masses. Aneurysm should be excluded by fluoroscopy and angiocardigraphy. Intracranial and intrathoracic tumors are somewhat analogous in that each is enclosed in a more or less rigid, bony cage and produces symptoms by compression of adjacent vital structures. The usual symptoms of mediastinal tumors are cough, pain in the chest and dyspnea.

For convenience of discussion, mediastinal tumors are usually divided into two types: anterior and posterior mediastinal tumors. The most common anterior mediastinal tumor is a lymphoma, such as lymphosarcoma or Hodg-

kin's disease. The next most frequent are the so-called teratoid tumors which include dermoid cysts and teratomas. We, as physicians, are often too complacent in advising surgery for asymptomatic dermoid cysts. Of the 300 cases reported in the literature, 13% presented malignancy at the time of operation. (Fig. 7) Posterior mediastinal tumors are most often of one common variety: Neurogenic tumors—including neurofibroma and ganglioneuroma. It is estimated that one-third of neurogenic tumors are malignant. Bronchogenic cysts are found in both the anterior and posterior mediastinum but are most frequently near the bifurcation of the trachea. They are usually thin-walled and contain clear viscid fluid. Surgical removal is indicated to establish the diagnosis and to relieve pressure symptoms. Intrathoracic goiters are most often present in the anterior mediastinum but are occasionally found in the posterior mediastinum. (Fig. 8).

The status of irradiation therapy in mediastinal tumors has been clarified. If roentgenologic and clinical evidence indicate the presence of a lymphoma, then a test dose of irradiation should be given. If improvement does not follow in due course, thoracic exploration should be advised as the presumptive diagnosis of lymphoma is likely to have been incorrect. Roentgen therapy is valueless in the other common mediastinal cysts and tumors but is of importance, both diagnostically and therapeutically, in the various lymphatic tumors.

Case Report: J.L.D., ten weeks old white male infant, had presented increasing respiratory distress since birth. Initial resuscitation was quite difficult. Thereafter the patient

INTRATHORACIC GOITER

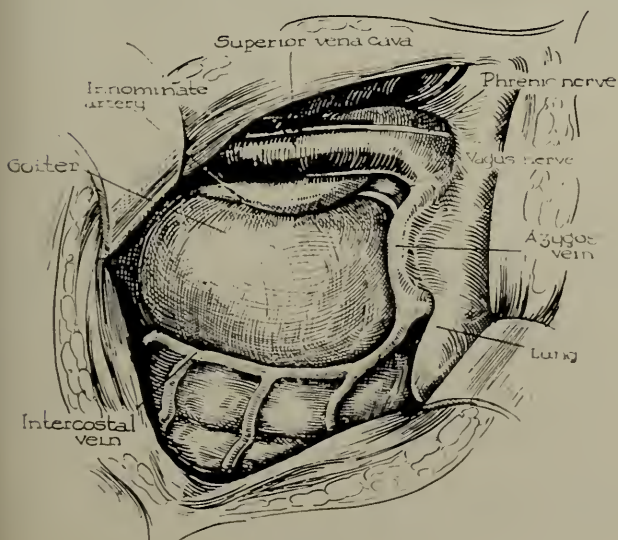


Figure 8

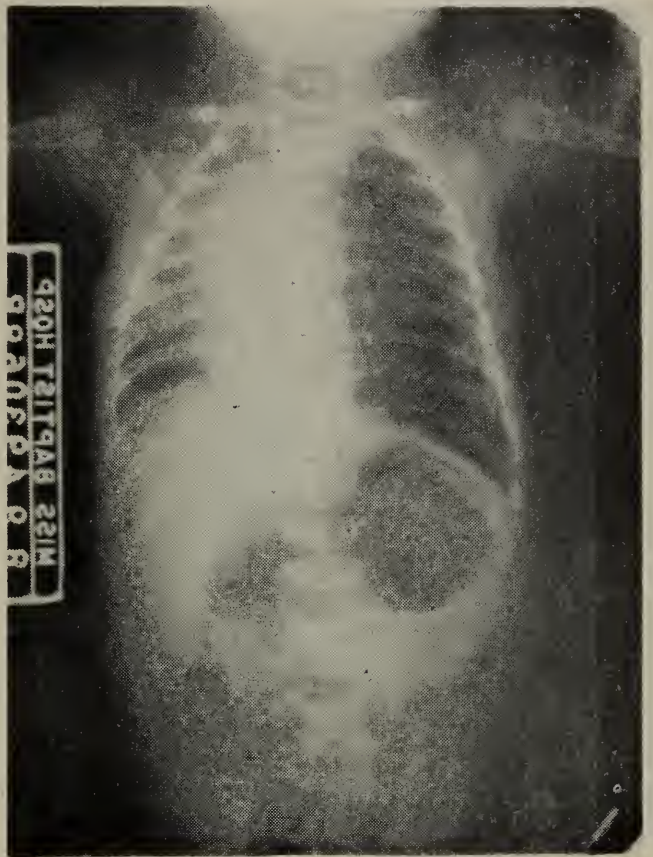


Figure 9

coughed nonproductively more or less constantly. After spells of coughing or crying he became markedly cyanotic. Feeding was frequently interrupted by paroxysms of coughing with resultant cyanosis. Physical examination revealed a well developed white male infant in obvious respiratory distress. Respirations varied from 36 to 44 and were shallow. The mediastinum was displaced to the right. The left chest seemed larger than the right, was hyperresonant and presented decreased breath sounds. Repeated x-ray studies showed the heart and mediastinal structures to be markedly displaced to the right with compression of this lung and emphysema of the left. (Fig. 9). The radiologic impression was obstructive emphysema due to obstruction of the left main stem bronchus. Lipiodol esophagram (Fig. 10) revealed a filling defect in the midportion of the esophagus just below the bifurcation of the trachea, which was not constant on all films. The child had been bronchoscoped on three different occasions with essentially negative findings except for an apparent extrinsic constriction of the left main stem bronchus. There was no evidence of intra/or endobronchial obstruction.

As the child's respiratory status was slowly growing worse, exploratory thoracotomy with

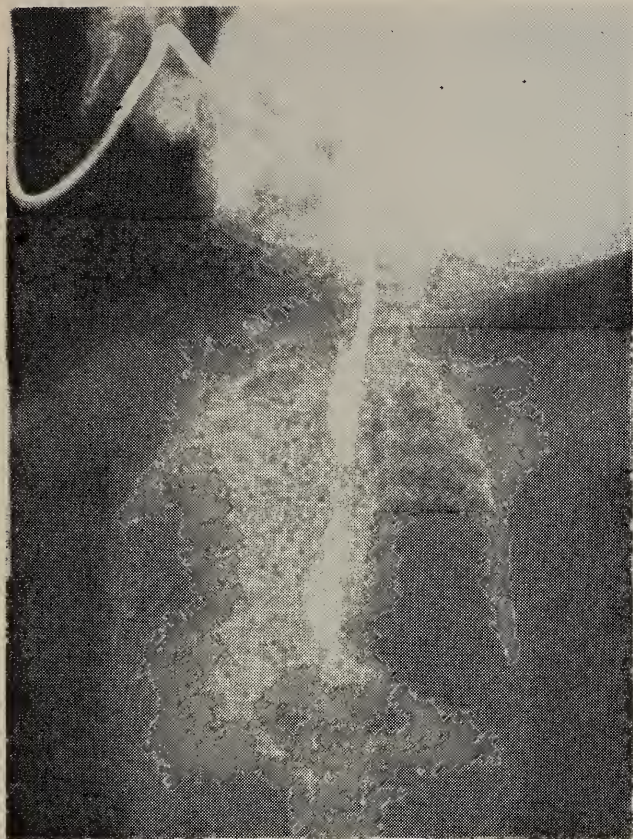


Figure 10

a preoperative diagnosis of pulmonary cyst or obstructive emphysema secondary to an enlarged hilar node or aberrant blood vessel was made. Exploratory thoracotomy under endotracheal anesthesia was done through a left posterolateral incision overlying the sixth interspace. As the pleura was opened the underlying emphysematous lung failed to collapse but herniated into the wound, much as does the intestine in an unrelaxed patient. We were unable to collapse the left lung with gentle manual compression. A thin-walled cyst about the size of a lemon was found in the posterior mediastinum just below the bifurcation of the trachea. (Fig. 11). This cyst was producing a check-valve type of obstruction of the left main

MEDIASTINAL CYST

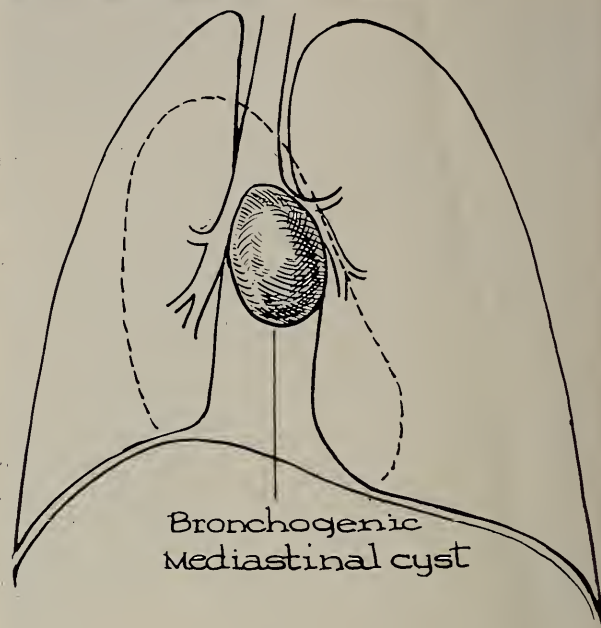


Figure 11

stem bronchus so that inspired air could enter the lung as the tracheobronchial tree relaxed with inspiration but was unable to leave the lung during expiration. As soon as the liquid contents of the cyst were aspirated the lung began to have normal respiratory excursions. The cyst wall was then removed with relative ease and the chest closed in layers with one catheter which was connected to a water trap. Postoperative convalescence was surprisingly smooth. Respiratory function seemed clinically normal at the time of discharge from the hospital. X-ray six weeks after operation reveals only slight shift of the mediastinum. The child is clinically well.

Comment: The policy of observation in undiagnosed mediastinal tumors is to be condemned because of the appreciable incidence of malignancy and the likelihood of serious pressure symptoms.

(To be concluded in next issue)

All societies are unChristian in many respects, and no society is without practices that promote human welfare. But where political institutions have been designed to reflect the moral law and to respect the dignity and worth of the individual, it has proved possible to organize peaceful change. Where society is organized in conscious denial of these two moral principles, force and violence are conceded to be inevitable.—John Foster Dulles.

The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Editorials

The Mid-South Postgraduate Medical Assembly, a record meeting in Memphis, followed by the Academy of General Practice in Saint Louis, and two weeks later the Southeastern Surgical Congress in Washington provided a full calendar for the doctor who tries to keep up. We must now look forward to our state medical meeting. The Mississippi State Medical Association will hold its annual session this year in May, beginning the second Tuesday as usual. Jackson is the meeting place. This meeting is always important. Make your plans now to attend. Dr. B. B. O'Mara of Biloxi is the able and active president and Dr. B. S. Guyton, the scholarly team-mate, is the incoming president. A fine program is in the making.

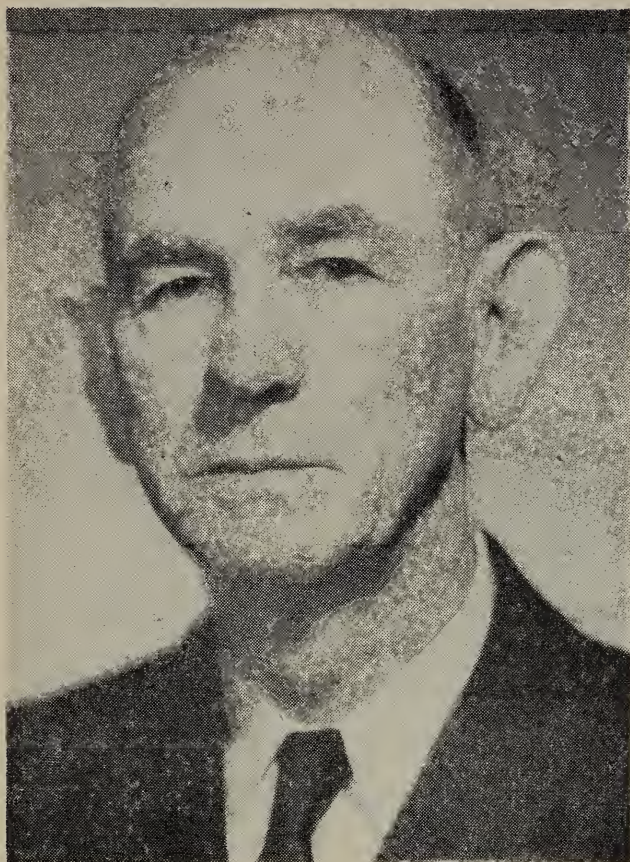
Our four-year medical school now seems more certain than ever before, the bill having passed both the senate and the house by a vote of

more than two to one. It is now thought that the needed funds will be provided. It seems quite certain that when our medical school is ready for action that we will have a five-hundred-bed veterans hospital located on the same ground. Our four-year school will no doubt activate and multiply our medical service throughout the state. We can serve and be served much better with a four-year school. Mississippi should have had a four-year school long before now. Our educational system is incomplete until we have a four-year medical school. The state is able to afford a four-year school; in fact it can no longer afford to be without one.

The indications are that the Academy of General Practice is going to serve a great purpose in our medical economy. While reaching a great number of doctors, it will raise their efficiency level and in turn warrant better service to the people. The Academy spells also a better cooperation between the specialist and the practitioner, and therefore better service to the people. The state chapter has a good program scheduled the day before the regular state meeting.

Friends of our proposed medical school applaud the efforts of Mrs. J. K. Avent and the Citizens Committee in its behalf. The forum at the Heidelberg Hotel on the night before the vote was taken in the house of representatives was most helpful. There is no one thing more convincing than a free discussion of any important matter.

We are especially grateful to Dr. Roy Kracke, dean of the University of Alabama Medical School. He knows the facts and knows how to handle them. He served well a second time before the appropriations committee. Great things do not just happen and the persistent activity of many who were at the Citizens Committee meeting offer good proof. Our four-year medical school will multiply medical service to our people and it will bring untold prestige to our state.



DR. PRICE ELEVATED TO PRESIDENCY OF MID-SOUTH

A scholarly gentleman from west Tennessee, Dr. Julian Price of Dyersburg, Tennessee, assumes the duties of president of the Mid-South Postgraduate Medical Assembly, succeeding Dr. Hoyt Allen of Little Rock, Arkansas.

Born in Collierville, Tennessee, Dr. Price has remained in the state all his life. He graduated from the University of the South at Sewanee and received his M.D. degree from the University of Tennessee, Memphis, in 1908. After an internship in Presbyterian Hospital, Memphis, he located in Dyersburg in 1910. There he established the Dyersburg General Hospital, of which he was president ten years, and in 1928 approved its consolidation with the Baird-Brewer Hospital. In the intervening years he did postgraduate work in Chicago, New York, New Orleans, and Rochester.

Dr. Price has been a fellow in the American College of Surgeons since 1927, was president of the West Tennessee Medical Society in 1948, and served also as president of the Tri-County Medical Society in 1949.



PRESIDENT-ELECT ARCHER

The new president-elect of the Assembly is Dr. John George Archer of Greenville, Mississippi. Educated at Vanderbilt, where he received his B.S. degree in 1912, he went to the University of Pennsylvania for his M.D. degree, graduating in 1916. From the same university his great-great-grandfather, also named John Archer, was the first graduate of medicine in America (Univ. Pa., 1768).

Dr. Archer came to the Mississippi Delta to begin the practice of medicine in 1916, and has steadily made a laudable contribution to his profession in Mississippi. He was chief of staff of King's Daughters in Greenville, until he became a member of Doctors Gamble Brothers and Archer Clinic where he is presently associated.

Dr. Archer's activities include: past president, Delta Medical Society; former vice-president from Mississippi to Mid-South Postgraduate Medical Assembly; local surgeon for Illinois Central Railroad; governor for Mississippi to American College of Physicians; chairman, Medical Advisory Board of Education of Selective Service Board, Washington County, World War II; member of the Advisory Committee on Heart Disease Control of the State Medical Association; member of American Legion,

Forty and Eight, and member of Trinity Methodist Church; fellow of the American College of Physicians; member of Delta Medical Society, Mississippi State Medical Society, American Medical Association, Southern Medical Association, Mid-South Postgraduate Medical Assembly, and Captain Medical Corps, World War I (foreign service).

TO PRACTICE IN RURAL AREAS

Names and home addresses of Mississippians now completing their medical training as a result of Mississippi's medical education loan program follow: Mrs. Virginia Nash Apter, Biloxi; George Earl Emmett, Clinton; James H. French, Water Valley; Nina Bess Goss, Jackson; Norman E. Green, Jackson; John H. Henry, Magee; Louie C. Henry, Water Valley; Sam P. McClatchy, Red Banks; James Louis McLain, Jackson; Eric A. McVey, Jr., Lambert; Mary Frances Mayfield, Laurel; Dr. John R. Mullens, Jr., Clarksdale; Dr. Fred P. Sage, Drew; Fred M. Shell, Jr., Jackson; Dr. Roy L. Smith, Utica; Mrs. Virginia Stansel Stacy, Ruleville; Joe W. Wiggins, Sidon; Louie F. Wilkins, Jr., Jackson; James P. Wood, Clinton; Anthony D. Jones (negro), Vicksburg; Albert L. Lott (negro), Brookhaven.

DEATHS

DR. DOUGLAS D. BAUGH

(Resolution adopted by the Lowndes County Medical Society at its monthly meeting, Feb. 28, 1950, Columbus, Miss.)

Dr. Douglas D. Baugh died on December 17, 1949, of coronary occlusion, at the age of forty-eight. With his untimely and unexpected passing the city of Columbus and the state of Mississippi lost an eminent and much loved physician. Respected and admired by his colleagues, at the time of his death Dr. Baugh was president of the Lowndes County Medical Society, an associate editor of the *Mississippi Doctor*, a member of various committees of the Mississippi State Medical Society, a fellow of the American College of Physicians, and a medical consultant and family physician of the very highest type.

The son and grandson of physicians, native of Mississippi, Dr. Baugh was a graduate of the University and the University of Pennsylvania School of Medicine, where he received the M.D. degree in 1929. He finished his internship in Touro Infirmary in New Orleans in 1930 and was on the staff of the Mississippi State Hospital at Whitfield for two years. He then practiced at Houston, Mississippi, where he met and married Mary Frances Jones in 1936. In 1937 they moved to Columbus, Mississippi, where Dr. Baugh established a wide reputation as a medical consultant.

He became a fellow of the American College of Physicians in 1940. He kept up to the minute in progress in medicine by assiduous reading and attending medical conferences—indeed, at the time he was stricken with his fatal coronary occlusion seven days before his death, he was en route to a district meeting of the American College of Physicians in Birmingham.

Dr. Baugh achieved much as a physician and always carried with him the loyal and reciprocal friendship of his patients and his colleagues. With easy bearing, with a humorous and kindly nature, and a penchant for telling humorous stories, Dr. Baugh was nevertheless a hard worker who arose early and worked late, who wrought splendidly, thought deeply and logically, and spoke wisely and kindly.

It is our sincere hope that Dr. Baugh's beloved family—his fine wife and three darling daughters—will be able to find some consolation from sorrow and grief over his going, with the knowledge that he achieved so much in his lifetime, even though his life was cut short.

We fellow-practitioners mourn the loss of our friend, and we would pay homage to his life and his work and his beneficent influence. We know that many physicians throughout Mississippi will join us in this.

DR. WILLIAM BERRY

Dr. William Gibson Berry, 68, of 111 Galvez street, died at the Veterans Hospital, Memphis, Tuesday night following an illness of several months.

Dr. Berry was born in Vicksburg, but moved to Yazoo City where he lived for several years, after which he moved to Jackson where he was a practicing physician for the past 20 years.

He was a Mason, a Shriner, a veteran of World War I and a member of St. Colomb's Episcopal Church. His remains arrived in Jackson for burial.

His survivors include his widow, Mrs. Louise Wade Berry; one son, W. G. Berry, Jr., of Jackson; one daughter, Mrs. Sam Dixon of Canton; two sisters, Mrs. Cecil Ross of Jackson and Mrs. Mary B. Thompson, Vicksburg.

DR. EDGAR GILES DIES SUDDENLY

Dr. Edgar Giles, beloved physician and community leader, died suddenly January 17 following a heart attack at his home in Avalon.

Dr. Giles was born at Westville August 4, 1882, the son of the late Dr. and Mrs. William Giles. He attended Millsaps College and obtained his medical degree at the University of Nashville. He moved to Leflore in 1908 and later located at Avalon in 1911 where he had practiced medicine since that date. He married the former Miss Ethel Drane of Memphis December 14, 1916.

He was a member of the A K K medical fraternity, North Central Medical Society and the Mississippi Medical Association. Dr. Giles was local surgeon for the Illinois Central Railroad, director of the Leflore Bank and Trust Co., a member of the Elks Club and a Methodist.

In the death of Dr. Giles his community lost a valuable asset and his many friends are distressed in his passing. His many fine traits and his service to his fellowman endeared him to a host of friends.

He is survived by his widow, Mrs. Ethel Drane Giles and the following sisters and brothers: Mrs. Mary Giles Hardin, Jackson; Mrs. Mattie Giles Kolb, Hattiesburg; W. F. Giles, Adeline, La.; H. D. Giles, Laurel; C. S. Giles, New Orleans; Dr. R. E. Giles Mendenhall; James Giles, Pinola.

Interpreting Medical Literature

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PEDIATRICS

TREATMENT OF AN INFANT WITH PAROXYSMAL AURICULAR TACHYCARDIA, Robert L. Moore, Southwestern Medical College, Dallas, Texas, *Pediatrics* 2:266-71, September 1948.

"An infant is reported who had 31 attacks of paroxysmal tachycardia between the age of 8 days and 5½ months. Many of the paroxysms would not stop spontaneously and heart failure would occur. Quinidine, acetyl-beta-methylcholine and digitalis were all effective in controlling the attacks. Because of violent reactions to acetyl-beta-methylcholine, this drug

is recommended only if the other two fail to bring relief. A typical response to therapy is described as follows: At age 4 months 'he awakened in the morning with another attack. He was given quinidine 29 mg. orally without effect. Two hours later this was increased to 40 mg. then 60 mg., 80 mg., 100 mg. and finally 120 mg. before the attack subsided. He was kept on 20 mg. of quinidine every four hours, and there were no paroxysms until a month later when he had another attack. This was stopped with a dosage of 120 mg. The next day another attack occurred which needed 140 mg. to stop it. Three days later 180 mg. was needed to stop paroxysms. His daily dosage was increased to 40 mg. every four hours'."

COMMENT: Paroxysmal tachycardia is a very perplexing condition in any patient with which a pediatrician has to contend. It will certainly get on one's nerves and the treatment is not altogether satisfactory; even that suggested by the author here, although along the proper course as practiced by most pediatricians, is certainly not altogether sure. Frequently we think we have these little patients better and they at once have an increase in their attack or a return of the symptoms, which in many instances is very distressing.

The family is engaged in a variety of activities associated with homemaking, housekeeping, and child care with which we are so familiar that we often fail to realize their significance. If there is to be any effective health care and preventive medicine, as distinguished from treatment of the sick, it cannot be provided by doctors, nurses, or other professionals—however much their knowledge and skills may be needed by the family. Health care and preventive medicine are carried out in the daily activities of housekeeping and homemaking.

Through marketing, cooking and the serving of meals, basic nutritional needs must be met, and through housecleaning, laundering, dishwashing, and similar sanitation, the necessary defense against infections and contamination must be maintained. Through provision of rest, care of minor ills, and all the cherishing functions within the home, individual members are protected and restored, so that they can live in health and carry on their daily activities. Lawrence K. Frank, *The Survey*, Dec., 1949.

State Board of Health

Felix J. Underwood, M.D.

SANITARY ENGINEERING ACTIVITIES

June-Dec., 1949

H. A. Kroeze, Director

On July 6, 1949 Governor Wright designated the State Board of Health as the state agency to handle the cooperative stream sanitation program with the U. S. Public Health Service under the provisions of Public Law 845. This program provides for studies of industrial and domestic waste pollution of streams and the determination of corrective measures where it exists. Because the State Game and Fish Commission now has a certain responsibility with reference to industrial waste discharge and its effect on fish and wildlife, the governor requested the two agencies to develop their work cooperatively in the state. Conferences between the State Board of Health and the State Game and Fish Commission have resulted in the development of general policies under which the two departments will carry out their stream sanitation functions on a cooperative basis. The work will be carried on by present personnel of the Game and Fish Commission now assigned to stream pollution work and personnel of the State Board of Health to be employed from funds furnished under the provisions of the federal law. It is anticipated that actual field work will commence in the spring of 1950.

The DDT residual spray work was completed for the season on June 30, 1949. There were a total of 129,434 houses and 163,427 outbuildings sprayed during the season. Due to the abnormally high fly incidence encountered this summer, experiments were set up at the conclusion of the regular spray period in Bolivar, Sunflower and Tunica counties to do some controlled spray work, using different mixtures of DDT with and without additional insecticides. The purpose of these experiments was to determine, if possible, the effectiveness of these different spray mixtures in killing flies, to serve as a guide for operations during the 1950 season. In the experiments 10,545 houses were treated. The houses that were treated on the

outside with various sprays not safe for indoors use showed that a certain degree of control could be expected for about a four-week period, but the amount of flies was still such as to cause a few complaints. The houses that were treated on the inside with various insecticides showed very good mosquito control and about the same amount of fly control as occurred in the outside spraying. It was concluded that a DDT emulsion type spray is more economical and just as effective as any of the newer insecticides that can be safely used around human habitation.

Shellfish activities for this period consisted of a continuation of surveys of the waters overlying the oyster-growing areas along the Gulf Coast and inspections of shellfish plants. The survey data will serve the Seafood Commission as a guide for oyster planting purposes so far as the sanitary quality of the growing waters is concerned. Beginning in August conferences were held with shucking plant owners preparatory to getting their plants in condition for the opening of the oyster season in September. Up to the present eight oyster opening and packing plants have been issued certificates indicating compliance with the sanitary requirements for the interstate shipment of shellfish.

Due to the addition of two engineers to the staff in the spring of this year, the Division has been able to carry on a more complete program relating to water supply, sewage disposal and swimming pool problems.

Particularly, there has been a considerable amount of work done in the swimming pool field due to the progress being made by municipalities in providing their citizens with such recreational facilities. Most of the pools being constructed are of the recirculation type which includes a complete water treatment plant. Division engineers have spent much time training operators in the proper operation of the water treatment plant and in the management of the pool to insure a safe pool water for bathers at all times. Considerable time has also been spent with sewage plant operators to

keep plants up to maximum efficiency to prevent stream pollution.

Little is known of the role, if any, mice play in the spread of typhus fever and other infections. In an effort to secure information of this nature, a state-wide mouse blood and ectoparasite study was begun during this period. This work will be conducted in a joint project financed by the State Board of Health and the U. S. Public Health Service.

The Assistant Supervisor of Milk and Food Activities of the Division served two weeks each as a member of the faculty at the lunchroom operators institute at the University of Mississippi and at Mississippi Southern College and one week in a like capacity at Jackson College for Negro lunchroom managers. He also took part in a similar local school held by the Jackson City School Board for managers of all lunchrooms in the city school system.

Progress has continued on the construction of health centers. At the close of this year, 13 main buildings had been completed and occupied, four main centers were under construction, four centers and seven branch centers were ready for advertisement, and 10 centers and five

branch centers were in the planning stage. The provision of adequate health center facilities for the county health departments is greatly improving the public health programs of these counties and increasing the number of persons particularly among the white population, securing services from the health department.

The program of school lunchroom sanitation carried on with the School Lunch Program of the State Department of Education has shown excellent progress. This work is on a progressive basis, so that each year for a three-year period school lunchrooms must meet additional items of sanitation in order to continue to receive the subsidy available through federal funds distributed by the School Lunch Program. This program has created considerable interest in other states and with the Federal School Lunch Program. A large number of requests have been received from other states for information concerning the plan. The spirit of working together on this activity between the School Lunch Program and the Division is an excellent example of inter-departmental cooperation to get a job done completely and in harmony.

THE STRATEGY

Peculiarly, it was the late Huey Long who prophesied that Fascism would come to the United States only under the guise of Democracy.

Let us observe the recent history of England. In 1884 the Fabian Society was organized to spread Socialist principles. They took their name and method of operation from the Roman general, Quintus Fabius Maximus, who was surnamed Cunctator, meaning "Delayer," so called for his dilatory tactics in the defense of Rome against Hannibal. Like Fabius, this small group, which included Beatrice Webb and George Bernard Shaw, planned their campaign, not to make England Socialist in one well swoop, but to accomplish their objectives gradually, bit by bit. And Shaw has lived to see his country adopt the Fabian principles a step at a time, by bloodless revolution.

All of the principles espoused by the Socialist party, of government operation, control and ownership are being sold to us under the false guise of Democracy, and all who oppose change are told they oppose progress.

Woman's Auxiliary

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BILOXI AUXILIARY

The Biloxi Unit to the Coast Counties Auxiliary had a luncheon meeting on February 7 at the Buena Vista Hotel, Mrs. P. E. Werlein, president, presiding. Plans were made for the Doctor's Day dinner on March 28, a committee composed of Mrs. D. L. Hollis, Mrs. E. B. Van Ness, and Mrs. Frank Schmidt being appointed to make preparations.

A donation was voted to the Preventorium Fund.

The group discussed the recently published book by John T. Flynn, "The Road Ahead", and decided to place copies in both the public and parochial schools of the county, asking teachers to help pupils become aware of the dangers of socialism through frank consideration of the warnings given by Mr. Flynn.

Delicious food and a happy conviviality marked the occasion with unusual pleasantness. Twenty-eight members attended.

PRENTISS COUNTY UNIT ORGANIZES

Doctors' wives of Prentiss County came together February 6 to organize the Prentiss County Unit to the Northeast Mississippi Medical Auxiliary, the meetings to be held concomitantly with the staff meetings of the doctors on the first Monday night of each month.

The following officers were chosen to serve the first year: Mrs. R. B. Caldwell of Baldwyn, president; Mrs. W. W. Strange of Booneville, vice-president; Mrs. J. H. Stephens of Booneville, secretary-treasurer; Mrs. H. G. Waldrop of Booneville, program chairman.

Plans were made by the group for the entertainment of the parent auxiliary which meets in Booneville March 14. At the close of the meeting Mrs. W. H. Anderson, hostess, served trays of salads and sweets.

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RESEARCH IN THE SERVICE OF MEDICINE

SEARLE

Treat the Eclamptic With Mercy*

WILLIAM F. MENGERT, M.D.

Dallas, Texas

ECLAMPSIA represents the convulsive phase of acute pregnancy toxemia. Generally it is a preventable disease. Pre-eclampsia—eclampsia represents a syndrome which is one of two chief causes of elevation of blood pressure during pregnancy. The other disease is essential hypertension or hypertensive cardiovascular renal disease.

During the year 1945, at Parkland Hospital in Dallas, there were five deaths in women with various phases of acute pregnancy toxemia. Four of these women died directly from pulmonary edema, and although the chief cause of death in the fifth was cerebral hemorrhage she also had pulmonary edema. Following this experience with pulmonary edema in these patients we revised our treatment of acute pregnancy toxemia in such a way as to avoid overloading the vascular tree by means of injected fluids. Since that time only one patient has died and there has been no pulmonary edema in any pregnant woman with elevation of blood pressure. It is well known in women with acute pregnancy toxemia that the retinal arteries are spastic. Moreover, the spasm is segmental. Overlaid upon a generalized constriction is a sausage-shaped constriction. Hallum feels that this same type of process takes place elsewhere in the body. At least two lessons may be learned from this. First, that every obstetrician and every physician practicing a good deal of obstetrics must learn to use the ophthalmoscope at least to the point

where he can recognize the changes in the retinal arterioles, and second, if the generalized constriction takes place in other parts of the body it undoubtedly accounts for the reason why it is so very easy to overload the vascular systems of women with acute pregnancy toxemia.

The current treatment of patients with eclampsia at Parkland Hospital is as follows: Immediately upon recognition, $\frac{1}{2}$ grain of morphine is given at once. Half of it ($\frac{1}{4}$ grain) is administered intravenously, and the other half ($\frac{1}{4}$ grain) intramuscularly. Additional doses of morphine, usually of $\frac{1}{4}$ grain, are given at 30-minute intervals until the respiratory rate has been reduced below 14 but not below 10. Occasionally 20 to 30 grains of chloral hydrate dissolved in 200 cc. of tap water are given as a retention enema in lieu of morphine. All external stimuli are reduced insofar as possible, including bright lights, noise and painful and unpleasant procedures such as intravenous, subcutaneous injections and catheterizations. Only enough fluid is given to maintain the patient's hydration and never more than 2500 cc. in any 24-hour period. After the patient becomes conscious she is maintained on phenobarbital for several days and then labor is induced. No hypertonic solution is employed in these patients and the usual fluid given intravenously is 5 per cent glucose in water.

It is sincerely believed that in the past more patients have succumbed from over-treatment than from neglect and, therefore, we plead to "treat the eclamptic with mercy."

*Resume of address given before the sixty-first annual session of the Mid-South Postgraduate Medical Assembly, Memphis, Tenn., Feb. 14-17, 1950.

Slowly but surely Englishmen are learning that the socialistic state is inefficient and expensive. It robs men of liberties, and imposes on men burdens too grievous to be borne. They are also realizing that the socialistic state cannot operate without penalties and compulsions. Where socialism reigns, liberty dies!

—Dr. Walter R. Courtenay

Common Intrathoracic Surgical Lesions*

PART II

G. E. TWENTE, M.D., F.A.C.S., and

J. HARVEY JOHNSTON, JR., M.D.

Jackson, Mississippi

Bronchiectasis

BRONCHIECTASIS, as the name implies, is characterized by dilatation of a portion of the bronchial tree. It vies with tuberculosis as the most common of chest diseases. It usually involves segmental adjoining bronchi in one or more lobes, leaving the remainder of the areas entirely normal. Pathologically one of several types of bronchial dilatation accompanied by varying degrees of pulmonary sup-puration and bronchial wall destruction is present.

Characteristically, it begins in childhood or early adult life, following an attack of atypical pneumonia. In infancy, particularly when the bronchi are small and the expulsion efforts are weak, atelectasis is prone to occur. In infancy basal triangular shadows containing dilated bronchi have been noted and attributed to atelectasis. As the condition persists, the retained infected secretions cause inflammation and destruction of the bronchial wall with subsequent dilatation.

The symptoms of chronic cough and expectoration are progressive, disagreeable, and often disabling. The symptoms may persist from the outset, or disappear entirely only to recur and become more prominent with repeated attacks of respiratory infection, particularly during winter months. Hemoptysis is frequent and sometimes massive. The expectoration may be very foul smelling and frequently will form layers on standing.

Too frequently the disease passes unrecognized, being diagnosed as chronic bronchitis. This diagnosis should never be made until bronchograms have ruled out bronchiectasis. The duration of symptoms is prolonged, lasting an average of twelve to eighteen years. It has been estimated that 13 per cent will be dead in five years, untreated. In a series of cases reported by Bradshaw, Putney and Clerf, from the Jefferson Medical College Hospital for ten years, 59 of 171 patients died of bronchiectasis, or its complications, untreated.

The diagnosis is based on the symptomatology, the roentgenographic, bronchoscopic, and bronchographic observations. Of these the

latter are by far the most important. The physical findings are often misleading.

Normal auscultation may be elicited. Fine to coarse rales may be heard. X-ray findings on the plain chest film may show only increased vascular markings. However, bronchography may be performed anywhere that x-ray is available. It is only necessary to anaesthetize the pharynx and instill iodized oil into the tracheobronchial tree, taking antero-posterior and lateral films. These will demonstrate clubbing and dilatation of the involved areas.

Once the diagnosis is made, the treatment is surgical. Conservative therapy is effective in only the very mild, reversible cases. Prophylactically bronchoscopy may be of value in those cases in infancy, which are early and are characterized by basal triangular shadows of so-called atelectasis, but which are forerunners of bronchiectasis, and which has been called by Graham and Singer, pseudobronchiectasis. Segmental resection of the involved segments is the only treatment which has proved satisfactory.

With the advent of the antibiotics, increasing use of whole blood before and during surgery, the improvement of surgical techniques, the greatest of which being the well trained anaesthesiologist, pulmonary resection has become a moderately safe procedure.

Case Report: J. P. a 16-year-old white female was admitted to the Baptist Hospital, June 28, 1949, with a history of cough and expectoration of two and one half years duration. The sputum was more abundant mornings, and formed layers on standing. Three years ago, she had pneumonia three times in one winter and has continued to cough since. She was at the Sanatorium five months, but no tuberculosis was found.

Physical examination revealed a 16-year-old white female, who weighed 163 pounds, and was 5 ft. 10 in. tall. Examination was otherwise negative. X-rays revealed haziness at both bases, (Fig. 12) and bronchograms revealed dilatation and clubbing of the bronchi of the left lower lobe and slightly lingula, (Fig. 13 and 14). She was given a high caloric diet, multi vitamins, postural drainage twice daily, penicillin, and daily transfusions. On July 5,



Fig. 12—Roentgenogram of chest showing minimal findings in sixteen year old female with bronchiectasis.

1949, thoracotomy was performed, resecting the lower lobe and the lingula of the left upper lobe, which was found on exploration to be more involved than was previously reported. The chest was closed with drainage, using Wangenstein suction to maintain negative intrapleural pressure. The usual drugs, blood transfusions and oxygen were used postoperatively. The postoperative course was uneventful. She was discharged on the fourteenth postoperative day.

On two-month checkup, she was feeling fine, has no cough and returned to school this fall.

Carcinoma of the Esophagus

In comparison with surgery of other parts of the gastro-intestinal tract, surgery of the esophagus is comparatively young in this country. It was as recent as 1938 that Phemister performed the first successful esophago-gastric anastomosis in this country. Since that time rapid strides have been made in both the diagnosis and treatment.

Carcinoma of the esophagus comprises about 5 to 7 per cent of gastro-intestinal malignancies. They occur more frequently in men than in women, and 75 per cent occur in the age group from forty to sixty years. The etiology is unknown, but has been attributed

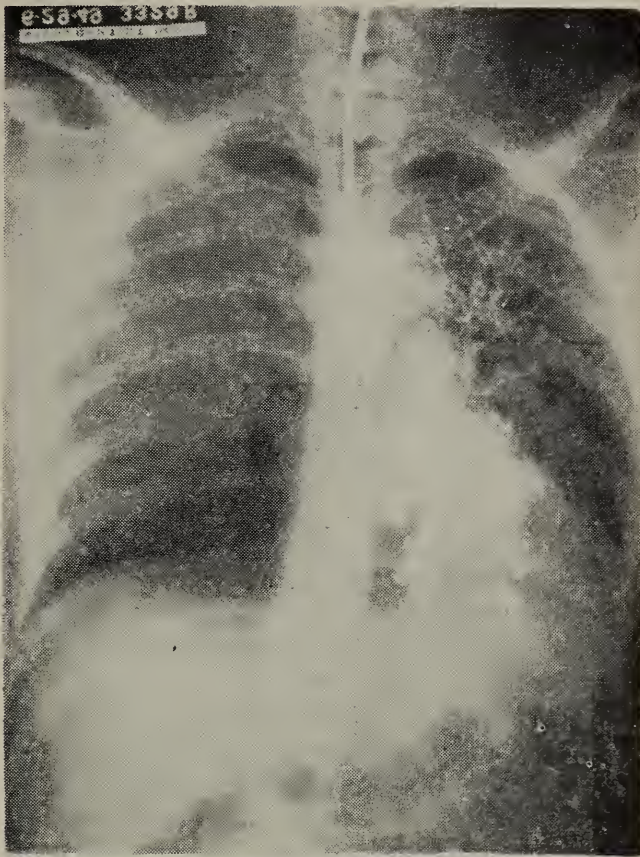


Fig. 13 and 14—Lipiodol bronchograms, anteroposterior and lateral views revealing clubbing of terminal bronchi of left lower lobe and lingula.

to oral infections, strong wines, and hot and highly seasoned foods, (China) hot tea, (Scot-

land) and strong alcoholic drinks. It is known that carcinoma of the esophagus surpasses or equals the incidence of carcinoma of the stomach in male Chinese. Pathologically it occurs in the upper third of the esophagus in 20 per cent of cases, in the middle third in 37 per cent of cases, and in the lower third in 43 per cent of cases, according to statistics of Ochsner and DeBakey. Microscopically it is a squamous cell carcinoma. Because of a lack of serosa covering, early spread to adjacent tissues occurs; such as to the aorta, hilus of the lung, left main bronchus, and the vertebral column. Fixation to these tissues results in inoperability at an early date. Distant metastases occur late.

Early diagnosis is the criterion for the success of treatment. Ulceration of the esophageal wall or minimal diminution in the caliber of the lumen will produce symptoms more quickly than similar lesions elsewhere in the gastrointestinal tract. It is extremely important to view with alarm any change in the swallowing habit. Thorough radiographic studies of the esophagoscopy and biopsy in every patient with suspicious radiographs should be performed.

As stated by Garlock, the surgical treatment of this condition is a cooperative problem, requiring the combined efforts of the roentgenologist, the esophagoscopist, internist, anaesthesiologist, surgeon, and nursing staff. Preoperative treatment should include massive, whole blood replacement, preoperative nebulization with penicillin, chemotherapy, and large doses of vitamins. The weight should be closely followed and an attempt made to replace a portion of the weight loss in these emaciated patients. Jejunostomy or gastrostomy may be necessary, although if feeding is otherwise possible it is best to avoid these methods.

From the standpoint of treatment x-ray has little to offer. Surgery is the treatment of choice. It should be employed even though distant metastases are found or are suspected, where the condition of the patient permits, for even though the lesion or its metastases may not be resectable, an anastomosis between the the normal esophagus and stomach will make the patient more comfortable and many of these patients with distant metastases may survive the operation for months to several years. For lesions of the lower third, the approach is posterolaterally through the eighth rib bed and through the diaphragm. The combined approach allows adequate exposure in

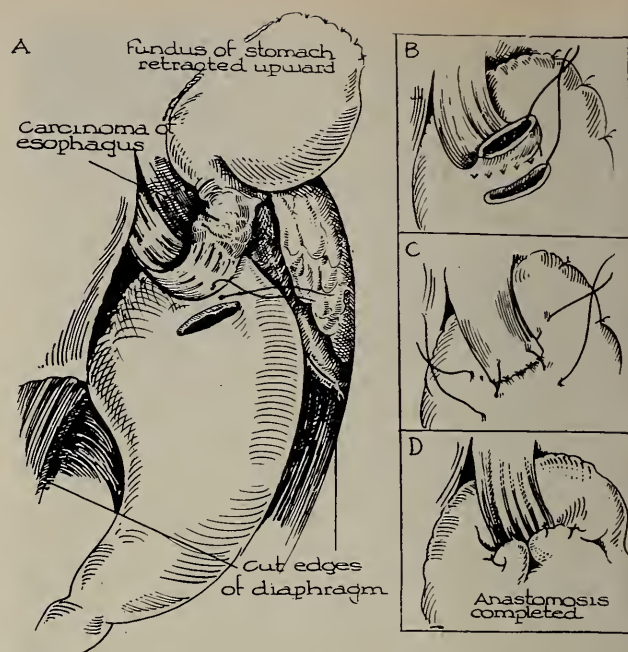


Fig. 15—Diagrammatic illustration of esophagogastrostomy within the chest. Note that the stomach is used for traction in anastomosing before the lesion and upper stomach are resected.

the chest as well as the abdomen. The lesion of the lower third of the esophagus is resected along with the upper one third of the stomach. The remainder of the stomach is brought up into the chest and an anastomosis performed. (Fig. 15).

Case Report: Mr. Z. F., a 48-year-old white male was admitted to the Baptist Hospital, with complaints of difficult swallowing of six months duration and loss of 20 pounds weight in six months. Physical examination revealed an emaciated white male, with flabby skin. The only positive findings were epigastric tenderness and scars along the saphenous veins. His weight was 104 pounds. X-rays with barium esophograms revealed filling defect of the lower cm. of the esophagus. (Figure 16). He was able to swallow soft foods. On August 15, 1949, surgery was performed, removing the lower one third of the esophagus and the upper one third of the stomach, with the peri-esophageal fascia and adipose tissue, stripping the aorta and the greater omentum and gastrohepatic ligament and contained nodes, saving the gastro-epiploic net work along the greater curvature. The approach was through the eighth rib bed and diaphragm. Postoperative course was uneventful, which closed up a bronchoscopy. He was given water by mouth on the third postoperative day and full liquid on the following day. On the sixth postoperative day, he was on six soft feedings daily and was discharged on the ninth postoperative day on soft diet. He had no pain on swallowing. The pathological report revealed squamous cell



Fig. 16—Lateral esophogram showing lesion of lower one third of esophagus. Biopsy at time of gastroscopy revealed squamous cell carcinoma of the esophagus.



Fig. 17—Lateral esophogram showing postoperative intrathoracic esophagogastric-anastomosis.

carcinoma, Grade 3, with lymph node metastases. At two-month follow up the patient has gained 12 pounds and is eating 5 meals daily and has no pain. (Fig. 17).

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Tracheoesophageal Fistula With Atresia of the Esophagus

Death within three weeks is the inevitable course in congenital esophageal atresia unless surgery is employed. With surgery the prospect of survival though admittedly slender is improving.

The anomaly usually involves the esophagus at a level corresponding to its middle and upper thirds. Usually the upper portion ends as a blind pouch, and the lower portion originates

ATRESIA OF ESOPHAGUS

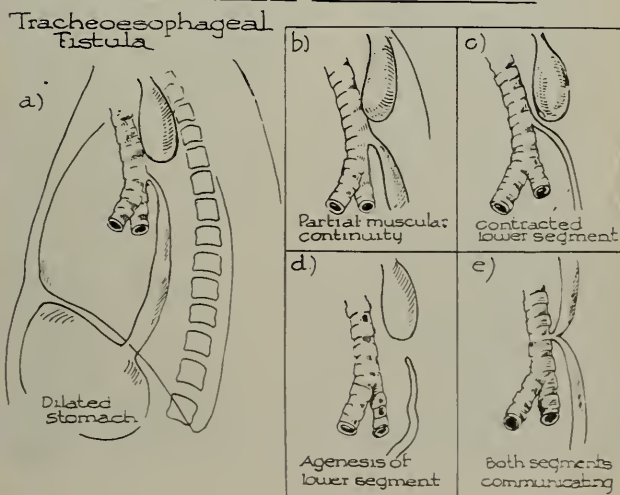


Fig. 18—Diagram of various types of atresia of the esophagus with tracheoesophageal fistula. Type (a) accounts for seventy to eighty per cent of cases.

as a tracheoesophageal fistula approximately one centimeter proximal to the bifurcation of the trachea. This type accounts for from 70 to 80 per cent (Fig. 18). Other congenital anomalies are usually present, most frequently pyloric stenosis or atresia.

Symptoms are inability to swallow, accompanied by dyspnea, and cyanosis occurring in an infant soon after birth. If a soft rubber catheter is passed into the esophagus and obstruction is demonstrated, it is only necessary to instill a small amount of iodized oil and the blind upper pouch is demonstrated. (Figure 19 and Figure 20). It should be strongly emphasized that iodized oil and not barium should be used, since barium causes a severe tracheobronchitis and pneumonitis which is fatal. Usually where there is potency of the tracheoesophageal fistula, air will be present in the stomach. Flat films of the abdomen may be of assistance in demonstrating the presence of other congenital anomalies. The presence of air in the stomach with dilation, along with the absence of air in the remaining small bowel may point to the presence of congenital atresia or stenosis at the pylorus. Untreated, these patients die from pneumonia and starvation.

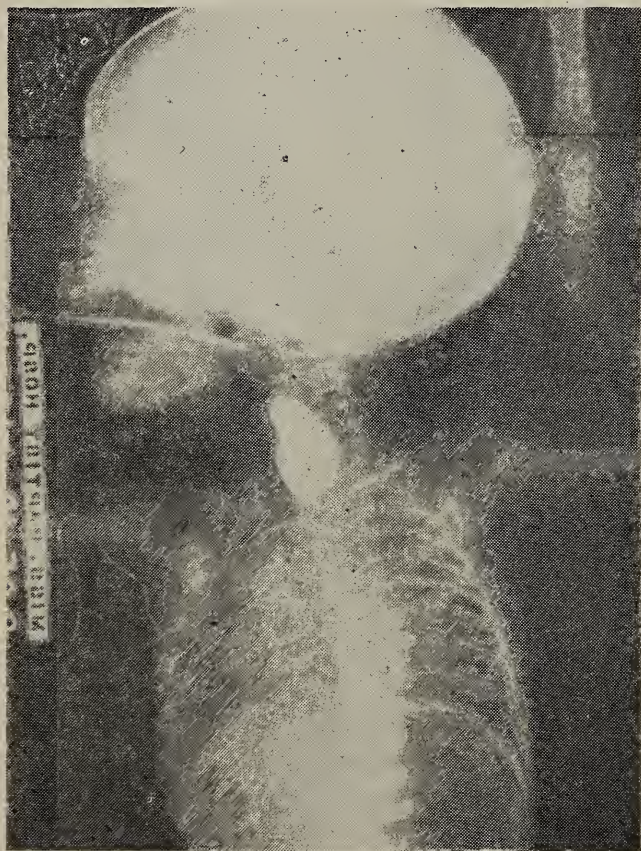


Fig. 19—Roentgenogram of six-day-old infant showing blind upper pouch of esophageal atresia with catheter in place depicting manner of diagnosis. (Barium should never be used as fatal tracheobronchitis will result!)

Preparation should be begun when the diagnosis is made. From the fourth to the sixth day is the most favorable time for surgery. About twelve hours are allowed for the preparation, consisting of intravenous dextrose or dextrose-saline solutions and blood transfusions.

Surgically the problem is threefold; to get food into the stomach; to drain the blind pouch; and to close the fistula. This may be accomplished by extrapleural anastomosis of the two esophageal segments after closure of the fistula, or by exteriorization of the upper segment in the neck, with gastrostomy and construction of an extrathoracic esophagus, or by transpleural esophagogastrostomy, bringing the stomach up through the chest. The former is preferable when possible. In all cases it is necessary to close the fistula.

Prior to 1939 there were no reported survivals from surgery. Since that time, Haight of Ann Arbor, Ladd of Boston, and others have had survivals in up to as many as half their cases in one year. Four hundred and eighty-seven cases have been reported.

Case: Male baby, age 7 days, was admitted to Baptist Hospital, on August 25, 1949. He

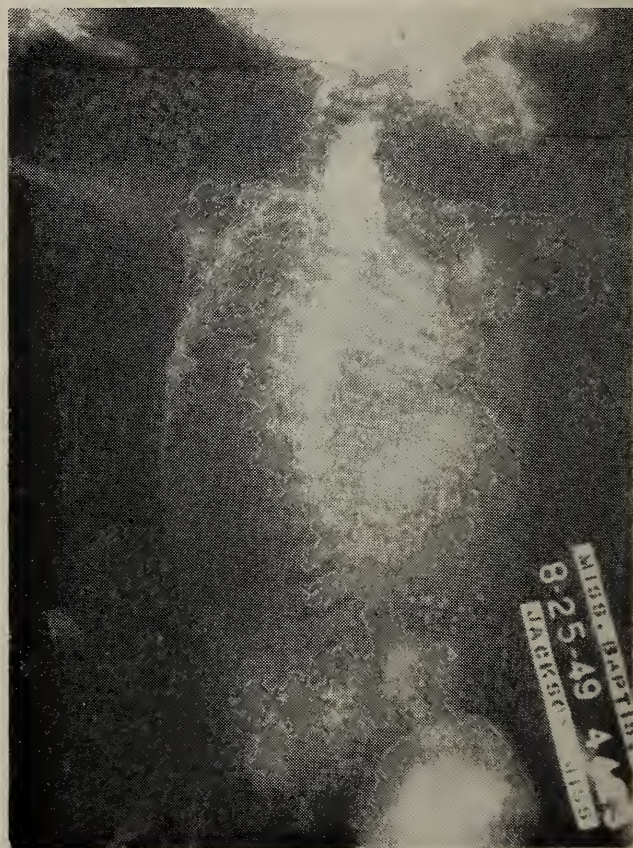


Fig. 20—Roentgenogram of six-day-old infant showing blind upper pouch visualized with iodized oil, and in addition showing excursion of pouch with respiration. Note that pouch barely comes into thorax.

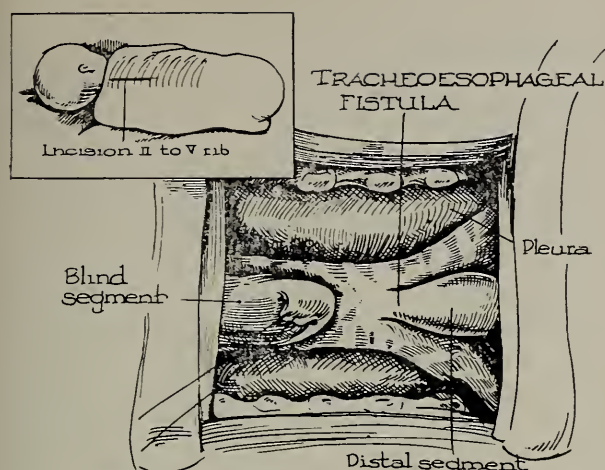


Fig. 21—Method of approach to pathology of atresia of esophagus with tracheo-esophageal fistula. This is an extrapleural approach.

had been unable to swallow food or fluids. The diagnosis had previously been made by the referring doctor. The baby was given intravenous fluid and blood transfusion the night of admission and the following morning. Surgery was performed on the baby's eighth day. At surgery the defect was isolated by a right extrapleural incision, removing segments of

the second to fifth ribs posteriorly (Fig. 21). The blind pouch was isolated first, and the distal segment by following the right vagus nerve. The tracheoesophageal fistula was ligated and primary anastomosis was possible, although there were between three and three and one half cm. between segments. The area was drained.

The patient developed a slow pulse and cyanosis on the first postoperative day. The anaesthesiologist aspirated the tracheal tree and for four consecutive days and nights continued to breathe for the baby. The heart beat which improved, was from 120 to 180, but respiratory motions were at long intervals absent. It was during these periods that Dr. Cain breathed for the baby.

The patient expired on the third postoperative day, apparently due to failure of the respiratory center.

Autopsy revealed: 1) The anastomosis was intact and healing nicely. 2) Closure of the trachea was intact. 3) There was no defect of the pleura. 4) Duodenal atresia. 5) Absent gall bladder. 6) Absent kidney. 7) Bilateral inguinal hernia.

A Comparison of Intra-Medullary Nails*

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AT THE present time there are on the market three outstanding intramedullary femur nails: 1) the solid diamond shaped Hansen-Street nail, 2) the hollow-rigid-clover-leaf Kuntscher nail, and 3) the smaller round more flexible Rush nail. The Rush nail depends for its stability on a spring principle and a three-point pressure. The Hansen-Street and Kuntscher nails are in reality stiff rigid rods.

Historically, the Rush nail antedates the other two. Dr. Leslie Rush of Meridian, Miss., first began to experiment with his intramedullary nail in 1937, antedating the work of Kuntscher of Germany, with his more publicized nail, some three years. The Hansen-Street nail appeared several years later. One of the two originators of this nail is Dr. Dana Street of Memphis, Tenn. Drs. Street and Rush independently have both accumulated a larger series of cases of intramedullary nailing than any authors in this country have so far reported.

The rigid Hansen-Street and Kuntscher femur nails, because of their size, have greater

tensile strength by actual test than does the Rush nail. However, for practical purposes, as far as the danger of fracture of the nail, there may be some doubt about this because of the spring principle of the Rush nail—a twig that will bend will not break as easily as a dry stick. We, personally, have had a Hansen-Street nail bend badly in an overweight individual who was allowed full weight-bearing too early when x-ray showed an abundance of soft callus, but not solid union. This is not meant for criticism of the Hansen-Street nail but criticism of the writer. In our opinion, medullary nails of any type should not be depended upon for full weight-bearing. They are designed to hold the fractured fragments in anatomical alignment, at the same time allowing active motion in joints immediately above and below the fracture site. Concurrently, muscle contraction brings about constant compression of the bone ends, which is the most important single factor making internal splinting superior to previous methods of treating fractures of long bones. This principle has been beautifully demonstrated experimentally

by Drs. Eggers, Pomerat and associates, of Galveston, Texas.

One marked advantage of the Rush femur nail over the other two is that because of its smaller diameter and round shape it does not **completely** fill or block the medullary cavity so that muscle contraction can more easily and readily bring about this most important factor of continuous compression of the bone ends. In our series of cases of fractured femurs collected since June, 1948 the cases treated by the Rush nail have reached a state of solid union, as demonstrated by x-ray, sooner than those treated with the Hansen-Street or Kuntscher methods. The amount of soft callus thrown out around the fracture site showed no appreciable difference regardless of what type nail was used but consolidation of the fracture site was more rapid in the Rush nail cases. I have removed one Rush nail as early as four months postoperatively with full confidence as to the solidity of the fracture, though this is not the usual procedure and is not recommended. Routinely the nail should be left in from eight to twelve months and should be removed only when there is solid "shaft" union as demonstrated by x-ray. I have never removed a Kuntscher or Hansen-Street nail under six months postoperatively. If the above inference is true of the Rush nail it must be due to its more ready adaptability to constant compression of the bone ends. With all type nails guarded partial weight-bearing with crutches some six to eight weeks postoperatively is beneficial if there is x-ray evidence of good callus production and beginning union, for this is simply an aid in promoting continuous compression of the bone ends. We are all familiar with this same principle in the use of the walking case—a tried and true method of stimulating callus formation.

We have had a fracture of the femur treated with a Kuntscher type hollow nail, about eight months postoperatively, who, on his own initiative, joined the U. S. Army passing the entrance physical exam with his femur nail intact. Several weeks later, while trying to jump a small ditch he fractured his Kuntscher nail completely at the fracture site. His Army surgeon promptly removed the two nail fragments, inserted another nail, and the fracture united without further complications. Again, this is no criticism of the Kuntscher nail—any nail can break; any nail can bend if subjected to enough strain. However, though the Rush nail is not at present as widely used as

the others I have yet to hear of a fracture of the Rush nail. Probably, because of the small size of the Rush nail as compared to the larger nails, physicians are more wary of allowing early weight-bearing before union has been accomplished. However, it has been our experience that patients often follow their own counsel as when to begin full weight-bearing. When there is **no longer pain** on weight-bearing many will begin to walk without crutches regardless of what you tell them or what the x-rays show. They reason that if it doesn't hurt it must be well and they act accordingly. Dr. Rush himself, in approximately 100 cases of fractures of long bones with some thirty-five femur fractures, reports no case of fracture of the nail.

Another marked advantage of the Rush femur nail is the simple hook construction of the proximal end. Like many things of true worth its greatness lies in its simplicity. No expensive or complicated gadgets as nail-holding, nail-starting, or nail-removing devices are needed. You simply tap the end gently with a hammer. With the larger nails that must practically fill the medullary cavity you often do more than tap gently with the hammer. You tap quite forcibly or your nail does not go in. Removal of a Rush nail, because of this hook construction, is most easily accomplished with a screw driver and a hammer. The Hansen-Street nail can be readily removed with its own special nail-removing device which is quite good. The Kuntscher femur nail can usually be removed easily but its nail-removing device is quite bulky, awkward and inefficient. A pair of mechanic's vise grip pliers is a much more efficient instrument.

The rigid Hansen-Street and Kuntscher nails, because of their construction, must be left to protrude from one half to one inch above the tip of the trochanter in order that they can be removed at a later date. In almost all instances when weight-bearing is allowed, these nails will migrate slightly upward leaving more of their proximal ends above the trochanter—where invariably they rub against muscle and soft tissues and form a chronic bursitis and a bursal sac filled with fluid. In our experience this is more the rule than the exception and is a constant source of minor annoyance to the patient. This is more true of the Kuntscher than of the Hansen-Street nail. The patient, in many instances, can feel the end of the nail just under the skin. Often the protruding nail definitely limits hip motion

and activity because of pain and discomfort. This is not true of the Rush nail. The hook construction gets a good grip on the side of the trochanter and it stays where you put it, flat against the bone. It does not migrate—it does not rub and irritate the soft tissues and hence no bursal sac is formed. A Rush nail patient is not conscious of the proximal end of his nail. The other two often are.

With the use of the Hansen-Street and Kuntscher nails careful preoperative x-ray studies are essential to determine the proper width nail to employ. A nail of a width narrower than the width of the medullary canal at the isthmus, its narrowest point, is selected. The width of the medullary cavity varies markedly in persons of the same build and height and seems to be an individual matter. Careless selection of a nail whose width is equal or more than the width of the canal can lead to grave complications. Instances have been reported on Kuntscher and Hansen-Street nails being driven partially down the medullary canal and then becoming locked and wedged tightly, the operator then being unable either to extract the nail or drive it farther down the shaft, being finally forced to saw the nail in two at the trochanteric region with a hack saw. Other instances have been reported of the above complication arising and the nail being finally extracted after two to three hours with much straining, pulling and pounding against the nail, and resultant shock to the patient from additional and unnecessary trauma.

With the use of the Rush nail this complication will not arise, as the nail is small enough to travel down the canal of any normal femur.

The Rush tibia nail, using double nail technique, can be used to advantage in treating supracondylar fractures of the femur and articular fractures of the tibia. For technical details of these procedures reference is made to the published writings of Dr. Rush, as we have yet to have personal experience using his technique in these particular fractures. Suffice it to say that they cannot be performed with the other type nails. Dr. Rush has also perfected another specialized technique for treating intertrochanteric fractures of the femur, using his femur nail in conjunction with a special adapter. However, we still prefer to use the solid Jewett nail for this type fracture.

With every medullary nailing there is undoubtedly minimal amounts of fatty embolism,

not sufficient to produce symptoms. There have been a very few deaths reported supposedly from fat embolism; but this danger is more theoretical than practical as proved by the hundreds of successfully treated patients. As long as the patient is not in shock and his condition is such that major surgery is justified, the danger of fatty embolism is minimal. However, again because of the small size and the minimal amount of force necessary to drive the nail, there seems no question that there is less displacement of the marrow fat with the Rush nail and consequently even less danger from fat embolism.

The rigid Hansen-Street and Kuntscher nails must practically fill the entire medullary cavity in order to achieve maximum stability and to prevent displacement, angulation and torque. It is a known fact that at the fracture site the larger the diameter of the nail the more likelihood of destruction of endosteal bone from pressure. Thus, the smaller diameter nail would be preferable from the standpoint of endosteal union. With the use of the Rush nail displacement, angulation and torque are prevented by the spring principle and three-point pressure made as this nail passes down the normal curve of the femur plus the constant power of the thigh muscles, the most powerful group of muscles in the human body.

The Hansen-Street and Kuntscher nails are usually applied in a retrograde manner passing the nail upwards at the fracture site through the proximal fragment, out the trochanteric region at its junction with the neck of the femur, and then, after lining up the fracture anatomically, the nail is driven back down through the fracture site and into the distal fragment to the distal femoral epiphyseal line. Other operators drive these nails from above downwards, boring a hole through the trochanteric region at or near its junction with the neck in order to start the nail down the medullary cavity. This is technically more difficult than the retrograde method due to the size and rigidity of the nails. This difficulty is not encountered with the Rush nail because of its smaller size, the sled runner point which hits the medial surface of the femur and slides downward, and because of its spring principle and flexibility in comparison with the rigid nails. The Rush nail is not constructed to be passed in a retrograde manner.

When the so-called blind nailing technique is desired, that is in simple fractures, those that are at or near anatomical alignment, and

where it is not desired to make an incision at the fracture site, the Rush nail, because of its smaller size, is easier to guide through the fracture site and into the distal fragment. The blind nailing technique should be the exception rather than the rule. If the fracture shows other than minimal displacement much time and struggle and added trauma will be used up in trying to guide the nail blindly through the fracture site.

In inserting the Rush nail it is very important that the hole drilled through the greater trochanter be as near the top of the trochanter as possible so that the nail can be started in as near a horizontal position as possible in respect to the femur, with the sled runner point directed toward the medial surface of the femur, being sure that the sled runner point first hits the medial surface of the femur below the level of the lesser trochanter. If the nail is started in too transverse a diameter the rather sharp sled runner point will pass out through the medial cortex of the femur and into the soft tissues. If this happens the nail cannot be passed, for when it is withdrawn and redirected, each time it is driven downward, the sled runner point will usually find the hole in the cortex and pass out into the soft tissue. Possibly, if the Rush femur nail sled runner point was blunted somewhat, this complication would be less likely to occur.

In the other long bones as the radius, ulna, tibia and humerus, there are only two types of nails in general use: the Kuntscher V type, and the Rush nail. Although the Kuntscher type is in much more general use, as the Rush nail has only recently appeared on the market, in these smaller bones, the Rush nail can be shown to even more advantage. The simple hook construction again demonstrates its efficiency in preventing migration. Here the tensile strength of the Rush nail is greater than that of Kuntscher. The sharp sled runner point, compared to a blunt point, its greater stability and round shape as compared to a V shape; the hook on the proximal end, giving a surface that can easily be tapped with a

hammer, compared to nothing on the end except a hole that must be filled with a special bulky and awkward nail driving apparatus—all these factors make the Rush nail simpler, easier, and more satisfactory to apply than the Kuntscher nail.

In summarizing, again we want to stress that this short paper was not written to criticize the Kuntscher and Hanser-Street nails. They are excellent nails. We simply believe from our own experience, which we admit is limited and therefore inconclusive, that the Rush nail is a better one. We may be accused of prejudice because Dr. Rush is a fellow Mississippian and in some circles the question has been known to be asked, "Can any good thing come out of Mississippi?" We would like to state that had the Rush nail come out of Moscow we would have preferred it for the same reasons outlined in this paper. But, who knows, perhaps the Russians may already claim prior discovery of all the medullary nails!

The only real objection to the Rush femur nail is that its tensile strength is not equal to that of the larger and more rigid nails and, therefore, the danger of bending of the nails with early weight-bearing is greater. Again, we want to state that in our opinion, which is contrary to some others who are more experienced, we do not advocate early complete or nearly complete weight-bearing in femur fractures treated with intramedullary nailing although it rarely ever occurs, especially if the dictates of common sense are followed by the patient. Any nail can bend or break when subjected to too much strain before solid union as demonstrated by x-ray. In our practice for six weeks to eight weeks no weight-bearing at all is allowed in patients treated with any type nail. Partial weight-bearing on crutches is then usually allowed and crutches are insisted upon until by x-ray there is no doubt that solid union has taken place. In the future we shall continue to use all three types of femur nails but preference will certainly be given, until proved otherwise, to the Rush nail, or better, as Dr. Rush prefers to call it, the Rush medullary femur pin.

The Treatment of Endometriosis with Large Doses of Stilbestrol*

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LAST JANUARY Dr. William Wiener gave a comprehensive paper before this group on endometriosis. I was among those who gave a formal discussion of that excellent paper and, as I remember, we each barely mentioned the possibilities of treatment of the condition with large doses of stilbestrol.

As long as ten years ago Karnaky in Houston, Texas, used stilbestrol experimentally for the treatment of endometriosis. Only recently, however, has this work gained wide recognition. As one would expect his methods and doses of stilbestrol have been altered as experience dictated. I will not burden you tonight with the changes but give only the present suggested schedule as outlined in a recent personal communication from Dr. Karnaky.

Twenty-five milligram-size tablets are suggested. Give $\frac{1}{4}$ tablet (6- $\frac{1}{4}$ mgs.) for three days and increase by $\frac{1}{4}$ tablet every three days until a total daily dose of 100 mgs. is given. Some brands of 25 mgs. size tablets are not scored and it is difficult to break them in quarters. Approximately the same schedule can be maintained by giving 5 mg.-size tablets in the required number. The maintenance dose of 100 mgs. daily is continued for from three to five months. It is the purpose of the treatment to keep the patient amenorrheic during this entire time. The first sign of spotting is suppressed by giving 75 to 100 mgs. stilbestrol every fifteen minutes until it is stopped. Usually this is a matter of an hour or so. At the end of from three to five months the drug is withdrawn by halving the dose every two days until $\frac{1}{4}$ tablet is reached.

There are two complications which are so commonly seen as to be expected. The first of these is nausea. Usually this spontaneously can be very annoying. In my several cases, to be mentioned presently, nembutal rectal suppositories were prescribed with fairly good results. Also nausea may be minimized by directing that the entire daily dose of medication be taken just before bedtime. Karnaky has found that from two to five cc. Solu-B given intravenously at the onset of treatment and p.r.n. thereafter is the most effective treat-

ment for this complication. I have not yet tried it. The other complication which one is likely to encounter is withdrawal bleeding. This can usually be controlled by giving fifty to one hundred mgs. testosterone propionate I.M. prophylactically the day stilbestrol is first reduced and from twenty-five to fifty mgs. p.f.n. thereafter.

The possible carcinogenicity of such large doses of estrogen naturally comes to mind. In his latest report Karnaky states that in over 13,000 women administered stilbestrol for all conditions he has found no evidence of carcinogenicity. In one controlled experiment thirty women were given 200 mgs. stilbestrol daily for twelve months. During this time each patient had a weekly pelvic examination, urinalysis, complete blood count and blood chemistry and there was no evidence of toxicity found (other than nausea). Despite these negative findings it is felt estrogens should not be given if there is any past or present malignancy in the patient. Stilbestrol is contraindicated also if either or both ovaries are enlarged more than five cms. in diameter.

In Karnaky's series he had occasion to get biopsies in a number of cases after treatment had been completed. These included laparotomies as well as lesions from incisional scars and of the cervix. In these cases no active endometriosis was found though the adhesions were not affected. Complete relief from dysmenorrhea is not to be expected and these adhesions probably account for it. However, dysmenorrhea is so mild as to be controlled usually by aspirin. Adenomyosis cases can be expected to gain less relief from stilbestrol than endometriosis elsewhere. About ten per cent of Karnaky's cases became pregnant subsequent to treatment.

The modus operandi of stilbestrol treatment for endometriosis is still theory. You know, of course, that the pituitary gland stimulates the ovaries to production of estrogen. In turn, when this blood estrogen reaches a sufficiently high level it depresses pituitary secretion. This see-sawing results in cyclic menstruation. Likewise stilbestrol suppresses the pituitary gland and thereby secondarily suppresses the ovaries. Perhaps not

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estrogen at all but some other, yet undiscovered, pituitary or ovarian hormone causes endometriosis. Another theory is that these sustained large doses of estrogen by over-stimulation exhaust and atrophy normal endometrial tissue (endometriosis) but have no permanent effect on normal endometrium. Pregnancy is rare in endometriosis. Following those rare cases of pregnancy, however, it has long been observed that there are usually several years relief from the symptoms of endometriosis. During pregnancy there is a sustained, high blood level of estrogen.

My series includes seven cases. In only three has the diagnosis been made at operation before therapy began. In only two cases has treatment been completed. One of these can be reported definitely as good and one poor, later coming to operation.

The remaining five cases are still taking stilbestrol. Necessarily then, an evaluation of my series is of little importance at this time. (I should mention here that the dose of stilbestrol used in these cases was considerably smaller than those now recommended by Karnaky. Bickers reported favorable results using cyclic stilbestrol only 5 mgs. each day from the fifth to twenty-fifth day.) The

following observations are of interest: These patients gain early relief from pain. The general well-being was definitely improved in each of my seven patients. Many similarities between patients taking large doses of stilbestrol and pregnant women are obvious. There is hyperplasia and frequently tenderness of the breasts. The vulva, linea nigra and areola about the nipples become much heavier pigmented. There is an increase in the elasticity of the pelvic floor as seen in pregnancy and occasionally ankle edema is present.

CONCLUSIONS

1. This treatment is still in the experimental stages.
2. Large doses of stilbestrol given over long periods to women free of malignancy appear to be harmless.
3. In selected cases of endometriosis it is the treatment of choice.

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Carcinoma of the Colon

Report of a Case of Carcinoma of the Descending Colon

Near the Splenic Flexure*

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DURING THE last decade many improvements have been made in the surgical management of carcinoma of the colon as well as in general surgery. It is the purpose of this paper to point out some of these improvements and present an illustrative case.

Formerly preliminary colostomy or cecostomy was advocated prior to removal of lesions of the colon. Now these multiple stage operations are almost obsolete. Colostomy is almost never performed except in cases of complete obstruction of the colon. In these cases colostomy may prevent rupture of the colon and usually should be done as an emergency. When obstruction is in the left hand of the colon, a transverse colostomy is preferred to a cecos-

tomy by Ravdin and most authorities, because the transverse colon is very mobile and easily delivered. Also decompression is more effective in this location. When obstruction is not complete, preoperative deflation of the bowel is very essential. According to Mahorner, "Optimum preparation of the bowel means the highest obtainable degree of emptiness."¹ This is accomplished by a low residue diet, laxatives and continuous Wangenstein suction for a variable length of time immediately preceding the operation. Many surgeons indicate that it is not necessary to resort to the use of the Miller-Abbott tube to produce satisfactory decompression of the bowel.

Patients with carcinoma of the colon usually have dehydration, altered blood chemistry, low blood protein, avitaminosis and anemia. All of these conditions give the patient the appear-

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ance of the well known malignant cachexia and increase the risk of operation. They are aggravated by the measures used to deflate the bowel. We now know that all of them can and must be corrected during the preoperative period by the administration of infusions, vitamins, amino acids and transfusions of whole blood.

Chemotherapy in the form of sulfasuxidine or sulfathalidine which are poorly absorbed may be given to diminish the bacterial flora of the intestines and reduce the risk of infection at the time of operation. There are some surgeons who state that they do not use them and get just as good results with strict aseptic technique. Streptomycin given orally will diminish the bacterial flora of the intestines to a greater degree than the sulfonamides.

The successful management of carcinoma of the colon depends upon the early recognition of the symptoms and signs leading to its diagnosis and early removal. The clinical picture in any given case of cancer of the colon will vary according to the location of the lesion, degree of ulceration, infection and obstruction and duration of the tumor.

According to Modlin, one or more of the following triad of symptoms can be elicited in more than 97 per cent of patients with carcinoma of the colon and rectum: bleeding from the rectum, alteration of the bowel habit and abdominal pain². Symptoms from carcinoma of the right colon may differ decidedly from those in the left colon. Obstruction is less common in the right colon, and the presence of weakness and severe anemia, or a palpable right abdominal mass may be the initial finding. Carcinoma in the right half of the transverse colon is more likely to exhibit characteristics of right-colon malignancy and beyond the middle generally presents those of left-colon lesions. The outstanding feature of carcinoma of the left colon is obstruction which is insidious in its onset. Pain is experienced earlier and is due to obstruction. Sooner or later blood and mucus appear in the stools. Distention is present to a variable degree. Mahorner calls attention to the fact that "Early carcinoma of the rectum never obstructs. The ampulla of the rectum is so large that it will accommodate a growth of considerable size without obstruction."¹ Patients do not have constipation but they do have early the sensation of incomplete evacuation.

More than 60 per cent of cancers of the large bowel can be diagnosed by digital examination, according to Modlin. Sugarbaker states, "Approximately 50 per cent of all cancers are accessible to digital examination. Another 25 per cent occur in the lower sigmoid and rectosigmoid and may be readily diagnosed with the proctoscope. The remaining 25 per cent occur above this level and require the assistance of the roentgenologist."³ X-rays of the colon following a barium meal and barium enema are highly accurate in the diagnosis of lesions above the examining finger. X-ray will give little or no information in carcinoma of the rectum. It should be remembered that tumors of the colon may be multiple. Canonico states that "About 4 per cent of tumors of the colon are multiple."⁴

Modern surgical techniques, including better anesthetics, have also lowered the risk of operation. Consequently, the operative rate has increased during the last ten years. There are many surgeons who now remove primary carcinoma in incurable cases as it seems to give more satisfactory palliation than colostomy alone. The main object in the treatment of carcinoma of the colon is to cure the patient, therefore the surgeon should not hesitate to do a thorough resection of the growth including all the involved glands. Bacon and Rowe reported a group of 146 cases in which the removed specimen of the bowel was sectioned serially at 2, 4, and 6 cm. below the growth and invasion was observed in only one instance at the 6 cm. level.⁵ Consistent with these findings the colon should be transected at least 6 cm. below the lower margin of the growth and for a greater distance above the growth.

Many writers prefer the closed aseptic method of anastomosis, but Dixon, Fansler, and others use an open method. Fansler believes that "Peritonitis does not result from contamination at the time of the operation but it comes from leakage in the vicinity of the anastomosis after the operation is completed."⁶ The operative procedure varies for different portions of the colon, with individual modifications. For carcinoma of the cecum or any portion of the right colon, a right colectomy is performed, in one stage, including the terminal ileum and a variable portion of the transverse colon. Continuity is reestablished by an end to end ileotransverse colostomy. For carcinoma of the transverse colon, a one stage resection is done with end to end anastomosis. For carcinoma of the splenic flexure and descending

colon, a primary resection is done with end to end anastomosis. It is necessary to mobilize this portion of the colon in order to permit closure without tension. For carcinoma of the sigmoid colon primary resection and anastomosis is preferred to the Paul Milulicz operation. Resection of the rectosigmoid colon for the carcinoma with end to end anastomosis through the abdomen is practical. Heretofore primary anastomosis of the rectosigmoid colon was considered impractical because the blood supply was supposedly inadequate. According to Meyer and Kozoll the blood supply of the colon is more adequate than is generally appreciated. They state that "Ligation of the superior hemorrhoidal artery can be performed without loss of viability of any portion of the pelvic colon. If the branches of the inferior mesenteric artery are ligated at the point of division of the mesentery and not beyond it, and the mesentery is not stripped from the colon for more than a centimeter from the line of anastomosis necrosis from lack of blood supply need not be feared."⁷ Mahorner illustrates that a slough will occur if the superior hemorrhoidal vessels are ligated at the promontory of the sacrum⁸. However, the risk of operation rises rapidly as the level of the tumor descends in the pelvis. The risk of leakage is reduced if the line of anastomosis falls within the peritoneal cavity. Carcinomas in the rectosigmoid just above the peritoneal floor constitute a problem in the choice of operation. Many surgeons still perform the Miles operation for these tumors. Some surgeons, namely, Dixon, Babcock, Bacon, Mahorner and others prefer single stage resections and restoration of normal continuity with preservation of the sphincter ani muscle for lesions at least 8 cm. above the anocutaneous line. However, more time is necessary to determine the comparative rates of cure.

Postoperatively, Wangensteen nasal suction is continued in every case until peristaltic action is established. Transfusions and parenteral fluids are given until suction is removed. Penicillin and sodium sulfadiazine are given for seventy-two hours or longer if necessary. Vitamins are given in adequate amounts. Patients are encouraged to move freely in bed, to get out of bed in two or three days, and allowed to go home in about two weeks from the date of operation.

Report of a Case

W. G., a single colored male, aged 28, a laborer, was admitted to the Methodist Hos-

pital at 8 p.m., on January 17, 1949. The chief complaint was "stomach trouble." There was no history of malignant diseases in the family. The past history revealed the usual childhood diseases without complications. In 1935 he had an acute attack of pain in his left upper abdomen with diarrhea, and was in bed two weeks. He has had diarrhea ever since.

The present illness began suddenly at 10 a.m., three days prior to his admission to the hospital, with severe cramping in his abdomen, diarrhea and fever. He stated that his bowels had moved every thirty minutes since onset and he noticed some dark red blood in his stools during this time. His abdomen had become swollen and tense. Review of the systems showed an essentially normal condition.

Examination revealed a rather thin colored male who was acutely ill with severe abdominal distress. His normal weight had been 140 pounds and the present weight was 125 pounds. Temperature 98.8 degrees. His pulse rate was 92 per minute; blood pressure, 94 systolic and 64 diastolic. The head and neck were normal except that his eyes were sunken. The heart and lungs were normal. The abdomen was slightly distended. Peristalsis was hyperactive. There was generalized tenderness with rigidity which were marked in the left hypochondriac region. There were no palpable masses, tumors or enlarged organs. Rectal examination revealed no pathology and the sphincteric tone was active and normal. Proctoscopic examination was negative except for a generalized red granular appearance of the mucosa of the rectum and colon.

Laboratory findings: January 18, 1949. Erythrocytes, 5,930,000. Hemoglobin, 52 per cent. Leucocytes, 16,500. Neutrophils, 78 per cent. Small lymphocytes, 22 per cent. Wassermann test, negative. Urine, negative except for 4 plus acetone.

X-ray findings: January 21, 1949. Chest, negative for a round circumscribed area of calcification about one inch in diameter at the hilum of the left lung. January 22, 1949 the gall bladder failed to cast a shadow (Graham positive). January 24, 1949 (Gastro-intestinal series following a barium meal). The stomach was of normal size, contour, mobility and motility. No constant filling defect. At the end of five hours the stomach was almost empty. Most of the barium was in the small intestines and head of the meal was in the cecum. The twenty-four hour film showed that the small intestine was empty and that practically the



Figure 1. X-ray of the colon following a barium enema showing an annular or napkin ring type of obstruction in the descending colon near the splenic flexure.

whole colon could be outlined. There was a filling defect or narrowing of the lumen of the descending colon near the splenic flexure for a distance of about $2\frac{1}{2}$ inches. There was very little barium in the colon distal to this defect. January 28, 1949, x-ray of the colon following a barium enema proved conclusively that there was an annular or napkin ring type of obstruction in the descending colon near the splenic flexure (Fig. 1). January 27, 1949, intravenous pyelogram was entirely normal.

The preoperative diagnosis was probable carcinoma of the descending colon near the splenic flexure.

Intensive preoperative preparation consisted of a blood transfusion, infusions and continuous Wangensteen suction for 48 hours before the operation.

On January 31, 1949, an exploratory laparotomy was performed under general anesthesia through a left rectum incision. About eight inches of the colon were removed at the splenic flexure including the growth, a portion of the omentum and fifteen inches of the jejunum which were adhered to the tumor. The colon was transected about two inches below the tumor and four inches above the tumor. Enlarged glands in the mesentery and mesocolon were removed for biopsy. Primary open end to end anastomosis of the colon and

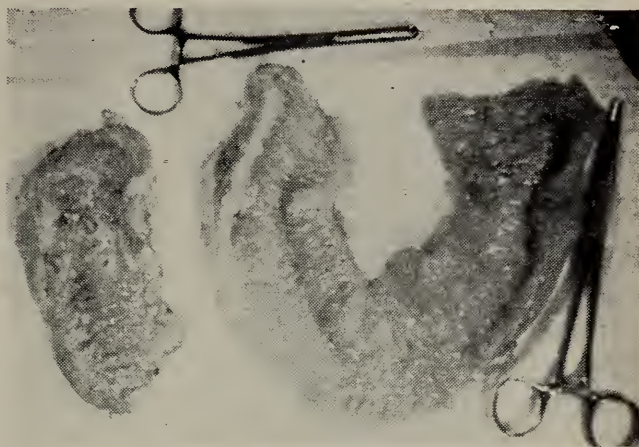


Figure 2. Photograph of segment of colon including the splenic flexure, attached portion of omentum and 15 inches of jejunum. Tumor is in the wall of the colon where the omentum is attached. Areas of attachment may be seen in the wall of the jejunum.

jejunum was done without colostomy or enterostomy. The abdomen was closed leaving a small cigarette drain in near the colonic anastomosis.

Gross pathology: There was an annular hard tumor involving about $2\frac{1}{2}$ inches of the wall of the descending colon near the splenic flexure (Fig. 2). When cut, the wall of the colon was found to be about $\frac{3}{4}$ inch thick in the tumor region and completely surrounded the lumen producing a narrowing of the lumen. There were areas of gelatinous material in the cut surface. The tumor was surrounded by redness and induration and was densely adhered to the omentum, parietal peritoneum and to areas of the jejunum for a distance of about 15 inches. After separation of the jejunum from the colon there were seen areas of redness and induration on the jejunum. The mucosa of the colon above and below the tumor appeared red and granular. The mucosa of the jejunum appeared normal (Fig. 3). Enlarged



Figure 3. Photograph of removed segments of colon and jejunum. The annular growth may be seen in the wall of the colon. The mucosa of the jejunum appears normal.

lymph glands were found in the mesentery and mesocolon. The stomach, spleen, pancreas, kidneys and liver were normal. The gall bladder was surrounded by adhesions. There were no stones.

Final diagnosis: Gland cell carcinoma, grade II with colloid degeneration of the descending colon. Lymph glands from the mesentery showed hyperplastic lymphadenitis. There was also chronic colitis and chronic cholecystitis.

Progress: The acute symptoms subsided gradually during the first three days in the hospital, and his temperature remained normal. He continued to have local tenderness and rigidity in the left hypochondriac region and frequent stools. The condition of the patient during and immediately after the operation was good. The postoperative course was uneventful. The temperature rose to 101.6 degrees on the following day and gradually returned to normal on the fourth day. A transfusion of blood was given after the patient was returned to his room, and one on the fourth day. Infusions and Wangenstein suction were continued for six days after which he was allowed to have clear liquids and food gradually. Sodium sulfadiazine was given in each infusion for three days and penicillin was given I M for a week. The patient was encouraged to move about freely in bed and was up in a chair on the third day. The drainage tube was removed on the fifth day and all of the sutures on the sixth day. He was discharged from the hospital on the fourteenth day.

Follow-up notes: Since the patient's discharge from the hospital his course has been marked by frequent stools and he has had three acute exacerbations of his chronic colitis. These attacks were controlled by paregoric, sulfathalidin and diet. He continued to have symptoms of chronic colitis, but he gained to his original weight of 140 pounds within two months and returned to work five months after his operation. Repeated stool examinations for amebae and cultures for dysentery bacilli were negative, but on September 1, 1949, he was given a course of emetine hydrochloride and carbarsone which resulted in marked improvement of his symptoms. Check-up x-ray of the chest on July 11, 1949 was negative. X-rays of the colon following a barium enema showed the outline of the whole colon with suitably large stoma at the point of anastomosis (Fig. 4). There was absence of the flexure with a rounded course of the colon in this area. On July 15, 1949, check-up x-ray



Figure 4. X-ray of the colon following a barium enema 5 1-2 months after operation showing that the splenic flexure has been removed and that the stoma at the point of anastomosis is suitably large.

following a barium meal showed, on the five-hour film, the stomach to be empty and the head of the meal to be in the descending colon. The twenty-four hour film showed both the small and large intestines to be empty.

Comment: This case is interesting because of the following facts:

1. Carcinoma is rare in that age group in which this case occurred.
2. It is also rare in the region of the colon in which it was found.
3. The presence of colitis and carcinoma of the colon in the same patient tended to be misleading in making an early correct diagnosis.
4. Apparently the diagnosis was made early enough to effect a cure, but more time is necessary to determine this fact.

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Recent Advances in the Diagnosis and Treatment of Non-Tuberculous Empyema and Hemothorax

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and

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IT IS THE purpose of this paper to consolidate the recent trends, as well as to offer the authors' experience, in the diagnosis and treatment of empyema and hemothorax. Since hemothorax is by far the most common complicated of chest injuries, and since both empyema and hemothorax offer similar problems in their management, they have been included together in this discussion.

The early diagnosis of pneumonia and adequate treatment with penicillin have reduced the incidence of post-pneumonic empyema to less than 1 per cent (1). Even though the sulfonamide drugs may prevent the development of empyema when employed early, they possess little, if any, curative value once the condition is established; therefore they have been justly supplanted by the use of penicillin. The addition of streptomycin to the antibiotic armamentarium of treatment has furnished an effective method of combatting organisms not vulnerable to penicillin. The use of these new biological agents has also aided in reducing the risk of empyema as a post-operative complication in chest surgery to a very low level and has encouraged the thoracic surgeon to make a direct approach on the already infected pleura. As to what role the more recent antibiotics bacitracin, polymixin, aureomycin and chloromycetin will play, it is too early to predict.

Etiology

Empyema is commonly secondary to acute pneumonic infections of the lung, but may be secondary to other lung infections such as abscess or bronchiectasis. It may develop as a post-operative complication of thoracic surgery or the infecting agent may reach the

pleura directly from infected penetrating wounds. Other less common causes are extension of infection from, or rupture into, the pleural cavity of a subdiaphragmatic abscess, osteomyelitis of ribs and vertebral bodies, and septicaemia. Brown (2) reports that, in 248 cases of empyema collected from the literature (exclusive of those following thoracic trauma or operation), the most frequent organisms found were pneumococcus, beta-hemolytic streptococcus and staphylococcus in that order. To a lesser degree he found anaerobic streptococcus, fusospirochetes and occasional gram negative bacilli, including hemophilus influenza and Friedlander's bacillus. Putrid empyema is usually secondary to perforation of a lung abscess into the pleural cavity and has practically always a mixed infection, usually with anaerobic as well as aerobic organisms.

Hemothorax may be associated with any of the various types of injuries produced by blast or crushing, in addition to penetrating and perforating wounds. Thomas and Cleland (3) report an incidence of 70 per cent in their 750 cases of chest injuries sustained during World War II. When infection develops in a hemothorax, this may be properly called empyema.

Diagnosis

From the history, physical examination, x-ray findings of fluid in the chest, sepsis and leucocytosis, the diagnosis of empyema may be quite obvious. On the other hand, the use of the recent chemotherapeutic agents has altered the clinical picture of empyema in some cases. With adequate penicillin treatment of pyogenic pulmonary infections, some

patients will appear to be recovered completely, but one to two weeks following the cessation of chemotherapy, they may manifest the symptoms and signs consistent with acute empyema. It should be stressed that failure of pneumonia to improve under prolonged and adequate therapy should lead one to suspect the possibility of infection of the pleura.

The radiological features are often distinctive. X-ray films should be taken at frequent intervals with the patient sitting or standing. Films of a recumbent patient are usually valueless, for the boundaries of a free effusion and disease of the underlying lung are indistinguishable in such a picture. Pockets of pus in the posterior gutter may blend in with the mediastinal shadow on the roentgenogram and be missed.

In suspected cases of infected fluid, thoracentesis should be performed at multiple sites if necessary. Utmost caution should be taken not to puncture the lung, but the use of the new antibiotics has largely alleviated the fear of development of phlegmon of the chest wall as the result of introduction of infected contents along the sinus tract produced by the needle. It is to be stressed that, in performing aspirations, large bore needles, size 13-15, should be used, otherwise large flakes of fibrin will plug the needle or thick pus cannot be aspirated, either of which will give the physician the false impression that no fluid is present. Smears and cultures should be taken of each pocket of fluid aspirated. Multiloculation frequently occurs and whereas a sterile culture may be obtained from one, a positive culture may be obtained from another.

Putrid empyema most commonly results from rupture of lung abscess into the pleural cavity, producing a bronchial fistula. With this there is increased sepsis and expectoration of large amounts of foul smelling pus. X-ray may demonstrate presence of air in the empyema cavity. On aspiration, putrid pus is obtained, from which one can usually grow cultures mixed with anaerobic, as well as aerobic, organisms.

There is usually no problem in the diagnosis of hemothorax. It can occur in any injury of the chest and can be confirmed readily by physical and x-ray findings. However, with small penetrating wounds, such as those sustained with a knife, the injury may have been considered so trivial that the patient was discharged, only to return in a few days with

symptoms and signs of a massive hemothorax. Blood acts as an ideal culture medium and infection may occur either as a result of a contamination at the time of injury or may develop secondarily. It is to be suspected in the presence of pyrexia, tachycardia, or leucocytosis, and confirmed by aspiration and culture.

Pathology

It is not within the scope of this paper to discuss the extensive injuries and lesions of the chest that may be associated with hemothorax or empyema. The authors would like to point out that the pathology occurring with the organization of hemothorax and empyema is strikingly similar. Also, if hemothorax should become infected, it is in reality an empyema. A clear understanding of the progressive pathological changes as they occur is essential in the subsequent treatment of these conditions and forms the basis for the recent advances in the prevention of residual changes which will result in a marked decrease in respiratory function and lead to a pulmonary cripple.

In the presence of pus in the pleural cavity, fibrin is deposited on the pleural surfaces in contact with the fluid. This soon forms a continuous sheet so that the empyema becomes encapsulated. This sheet becomes even thicker and organization occurs with the appearance of fibroblasts and later fibrous tissue. That portion of the envelope which invests the visceral pleura effectively prevents pulmonary reexpansion. During the first two to three weeks, the pleura underlying this wall of fibrin and fibroblastic tissue remains relatively normal and a plane of cleavage usually can be developed between it and the peel. This forms the basis of the operation known as decortication and allows reexpansion of the lung. Eventually, fibrous tissue from the organizing peel extends through the pleura into the interstitial tissue of the lung so that finding a layer of cleavage between the pleura and the peel becomes progressively more and more difficult and eventually impossible. Likewise, the invaded lung becomes poorly expansile and cannot be completely reexpanded even though the constricting peel has been removed.

In most instances of small, uncomplicated hemothorax, blood is absorbed without deleterious effect. Larger collections should be aspirated early in order to obliterate the dead

space and allow for reexpansion of the pulmonary tree. Unfortunately, extensive clotting or large deposits of fibrin can occur, preventing proper aspiration. The incidence of extensive clotting in hemothorax as a result of war injuries has been variously reported from 5 to 10 per cent (3), (4), (5), (6). In civilian practice, the incidence is probably not as high. If infection occurs, an empyema is present. The pathology of clotted hemothorax differs little from empyema with the exception that blood is present rather than pus. The presence of infection, however, does tend to produce a firmer, thicker membrane which usually develops more rapidly. Thus, from a technical standpoint, the peel is more easily removed in from three to five weeks in uninfected clotted hemothorax, whereas in empyema it may be quite difficult to remove after two to three weeks.

Treatment

The advent of penicillin in the treatment of empyema has made possible a more conservative management of a majority of the cases. (1), (2), (7), (8). However, it has not changed the basic principle of providing adequate drainage for the abscess (9), but with the aid of rapid sterilization by penicillin, frequent aspirations will produce effective drainage in from 50 per cent to 65 per cent (1) of the cases. Other forms of drainage, such as rib resection, are still necessary in certain cases. The management of a case of empyema varies somewhat with the type.

Nonputrid, Pyogenic Empyema: As soon as the condition is suspected the fluid should be localized as closely as possible by x-ray and physical examination. Aspirations should be performed, using a 13 or 15 gauge needle. Bacteriological studies of the fluid should be made. The laboratory should be informed if the patient has been receiving penicillin therapy so that the penicillin in the exudate can be inactivated by penicillinase. (10). Otherwise a false negative culture may be obtained. True negative cultures may be obtained in patients who have been under penicillin therapy long enough. The object of therapy is to both sterilize and obliterate the empyema cavity with complete reexpansion of the lung. As has been pointed out by many authors the empyema is not cured merely by sterilization. (1), (2), (9), (10), (11), (12), (13). Blades (10) cites a case which formed empyema necessitates after being sterilized. Chronic empyema

is a definite threat as long as a purulent cavity remains, regardless of whether it contains organisms or not.

Intrapleural penicillin is more effective than intramuscular therapy, but combined treatment should be given in all cases of empyema suspected of having pneumonia, septicemia or any other infection outside the pleural cavity. In these cases penicillin should be given systemically 25,000 to 50,000 units of aqueous solution every three hours or 300,000 units daily of one of the deposit preparations. After all infection outside the pleural cavity is under control, intramuscular penicillin may be discontinued (1). The pleural cavity should be aspirated daily, removing as much pus as possible. Irrigate the cavity thoroughly with normal saline, remove and instill from 100,000 to 200,000 units of penicillin in from 20 c.c. or 40 c.c. of normal saline. Dilutions of penicillin as high as one third the volume of the pus removed have been recommended. (1). In a few cases the pyogenic empyema may be caused by organisms that are streptomycin sensitive and penicillin resistant, such as *Hemophilus influenza* or *Friedlander's bacillus*. (10). Streptomycin, 1 gram, should be instilled in the pleural cavity daily in these cases. Penicillin should be added to the injection solution if there are also penicillin sensitive organisms present. Intrapleural penicillin and/or streptomycin therapy should be continued as long as pus is obtained or until the nonoperative therapy is abandoned. If the instillation of penicillin is discontinued after several negative cultures and before the cavity has been obliterated, the cultures may become positive again.

A favorable response to therapy is indicated by disappearance of toxemia, the fluid becoming sterile and remaining so (often after the first instillation of penicillin), and the amount of the fluid decreasing with each aspiration. The character of the fluid is variable. In many cases responding favorably it becomes thinner, but its remaining thick is not necessarily a bad sign. The empyema cannot be considered cured as long as fluid is present. It is difficult to determine when the nonoperative treatment has failed, but in general, if there is no evidence of a favorable response after a week or if the empyema is not cured in three weeks (1), (7), (8), (11), some other form of therapy should be considered. An unjustifiable delay in thoracotomy with rib resection may require more extensive surgical procedures later on. One or more of the following factors (8) may

play a part in the failure of the nonoperative treatment of empyema. A bronchopleural fistula may be present as a constant source of reinfection and may provide an avenue of escape of the penicillin from the pleural cavity; the pus may contain large clots of fibrin or even necrotic lung tissue which can neither be aspirated nor sterilized; the causative organism may be penicillin resistant; there may be multilocular cavities, one or more of which are inaccessible, or the therapeutic regime carried out may be inadequate. Assuming that the nonoperative treatment has failed, small and medium sized cavities (15), (16), should be drained by rib resection. All fibrin clots should be removed and a definite effort made to determine if the cavity is multilocular. Post-operatively adequate draining should be assured. According to Parker and Burford (13), those cases in which the cavity will be obliterated or reduced to a minimum size by drainage in six weeks, will show much long expansion within the first four weeks. If at the end of this time the cavity is not becoming progressively smaller, decortication should be considered.

In total empyema, in empyema with at least 50 per cent collapse of the lung, in cases complicated by bronchopleural fistula, and in certain cases of multilocular cavities (13), (15), primarily decortication is the treatment of choice provided the patient is not too toxic to stand the operation. The thick peel that encases the lung and prevents reexpansion is removed from the entire visceral pleura so that the lung can reexpand. If the patient is too sick to stand pulmonary decortication, drainage by rib resection should be performed and the patient reevaluated at the end of four weeks.

Putrid Empyema: These patients are very toxic and penicillin instillations should not be delayed until cultures are reported. Combined intramuscular and intrapleural penicillin therapy should be started at once. Aspirate as much pus as possible, irrigate with normal saline and instill 500,000 units of penicillin dissolved in 100 c.c. saline. According to Hewitt (7) this should be repeated every eight hours for the first 24 hours. At the end of this period of time the decision should be made as to whether to continue with the nonoperative treatment or to do a thoracotomy. If there is not a marked decrease in toxemia and if the fluid remains foul after 24 hours, a thoracotomy should be performed with resection of a segment of one or more ribs. Most of these

cases will require open drainage even though a few cases have been successfully treated conservatively (2), (14). With penicillin instillations, however, they are no longer considered a surgical emergency second only to hemorrhage and asphyxia. During the first 24 hours the patient can be prepared for surgery by decreasing the toxemia.

Hemothorax: In those cases of hemothorax who live to reach the hospital, the bleeding is from the lung, the intercostal or the internal mammary vessels. As the lung collapses, bleeding from it stops spontaneously. Only a few cases require control of hemorrhage by operation. Blood lost should be replaced by transfusions.

The treatment of hemothorax unattended by continued bleeding consists of early and frequent aspirations of blood to permit reexpansion of the lung. Aspirations should be begun 24 hours after the injury or earlier if the blood is causing respiratory embarrassment. Remove as much blood as possible with each aspiration unless the patient complains of extreme tightness in his chest during aspiration. As much as 2200 c.c. have been removed at a time without harmful effects. (17). A three-way stop-cock should be used in aspirating the blood so that air is not permitted to get into the pleural cavity. Air in the pleural cavity will prevent reexpansion of the lung. Continue aspirations daily until the chest is dry. The patient should receive penicillin intramuscularly during this period for prophylactic purposes.

In a small percentage of cases (5 per cent to 10 per cent), a large blood clot and/or massive deposits of fibrin form in the pleural cavity which cannot be removed by aspiration. This prevents expansion of the lung, leading to a fibrothorax, or may become infected, forming empyema. In these cases decortication should be done (17), removing the blood clot and fibrin peel which is only loosely adherent to the pleura in the early stages of the condition. Ideally, this should be done three to five weeks (6) following hemorrhage. If the operation is done before this time the peel is friable and is hard to remove. After five weeks it becomes increasingly adherent to the pleura.

Chronic Empyema: About 81 per cent of the cases of chronic empyema (18) are due to inadequate or delayed treatment of acute empyema; 14 per cent are due to tuberculosis and less than 10 per cent are due to miscellaneous causes such as bronchopleural fistula, foreign body, osteomyelitis of the ribs.

ecchinococcus disease and actinomycosis. In many cases an adequate drainage with removal of segments of two or more ribs, removing any diseased ribs or foreign bodies if found and breaking up septi between loculated collections of pus, will effect a cure. A Schede type of thoracoplasty or the Grow modification (18) may be indicated in a few cases. In selected cases of total empyema decortication is indicated. Even if complete reexpansion is not obtained the cavity is reduced in size so that a more conservative management becomes possible. Before decortication patency of the main bronchus should be determined by bronchoscopy.

As in any other acutely or chronically ill patient, the maintenance of adequate nutrition is very important. The value of frequent citrated blood transfusions which was so well recognized before penicillin should not be forgotten.

Summary

The etiology, diagnosis and pathology of empyema and hemothorax have been discussed. The use of intrapleural penicillin and/or streptomycin, and repeated aspirations of the infected pleural cavity have made surgical intervention unnecessary in a majority of empyema cases. The early recognition of unsuccessful response to conservative measures is essential in order that adequate drainage or decortication may be accomplished and chronic empyema prevented. In cases of hemothorax, repeated aspirations should be performed. If extensive clotting occurs, decortication is indicated.

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Diverticulosis*

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DIVERTICULOSIS IS a herniation of the mucosa of the intestinal tract through the bowel wall. It occurs at the point of least resistance which is usually located where a blood vessel pierces the bowel wall. Diverticula may occur anywhere in the gastro-intestinal tract.

About 80 per cent of all diverticula are found in the sigmoid area—the percentage decreasing as you ascend the intestinal tract. They are more common in the male than in the female.

Diverticulitis is an inflammatory disease of a diverticulum. It is rarely seen in a person under thirty-five years of age.

The symptoms are those of an inflammatory process within the abdominal cavity. These are pain, a rise in temperature with leucocytosis. This may be recurrent or constant and progressive. There may be signs of perforation, obstruction, and abscess formation—all symptoms being dependent on the severity of the inflammatory process and the extent of its progression. The inflammatory process may be confined to the diverticulum with inflammatory exudate produced around the diverticulum or perforation may occur with a resulting abscess formation—either of these conditions extending along the bowel, resulting in a thickened mass around the bowel, producing a partial or total obstruction. When this occurs, there is usually a palpable tender mass, x-ray studies revealing a filling defect at this point. If the obstruction is not complete the barium will pass above the lesion showing a distended lumen above the lesion with retention of barium following evacuation of the barium enema. The question then arises—is this lesion malignant or not? This question is usually not answered until a laparotomy is performed.

It is estimated that about one in four cases of diverticulitis require operation—the others responding to medical treatment, which consists of absolute rest in bed, the application of heat, the administration of one of the sulfa drugs, with or without penicillin, a bland diet, and small doses of mineral oil daily.

The surgical treatment depends on the size and severity of the lesion. It may consist of merely clamping and removal of the diverticulum, similar to an appendectomy, or it may require the resection of a part of the intestine.

CASE REPORT:

Mrs. J. L. H., Female, white, age 57. Height 5' 7", weight 200 pounds, blood pressure 150/90, para 2.

This patient was seen by me on April 4, 1948. Her complaint was pain in the upper left quadrant of the abdomen of three weeks' duration. She had been seen by another doctor and had been in a hospital for four days for examination with an unsatisfactory diagnosis and no relief of symptoms.

Physical examination revealed a rather obese white woman whose general physical examination was essentially negative except for moderate tenderness in the region of the splenic flexure, with some tenderness over the left kidney. There were no palpable masses. At this time her temperature was 98°, pulse 80, respiration 20, blood pressure 150/90. Her urine was negative, red blood count 4,650,000, hemoglobin 95 per cent, white blood count 7,800. X-ray of the colon showed a filling defect at the splenic flexure, the left kidney being negative. At this time although x-ray showed a definite filling defect there was a question—due to general physical condition and to excellent blood count—of a beginning malignancy of the colon or an inflammatory process. The patient was put on 60 grains of sulfathaladine daily and told to return in four days.

Another barium enema was given on her return and again the x-ray showed a filling defect at the same location. The temperature was still normal, there was no material change in the blood picture and some of the tenderness had disappeared.

She now complained of constipation which was not present at the time of her first examination. The patient and her husband were advised that sufficient pathology was present to warrant an explora-

* Read before the fifteenth semi-annual session of the Delta Medical Society.

tion of the splenic flexure. Consent was denied due to general improvement in the patient. She was sent home and told to continue taking 60 grains of sulpathaladine daily and to return in eight days.

She returned on May 8 complaining of a return of the pain in the region of the splenic flexure and increasing constipation. Another picture was made of the colon with the same filling defect evident, only more marked. Surgery was advised.

She returned on May 14 and was admitted to the Greenwood LeFlore Hospital. The evening before operation she was given three hot soapsuds enemas, sodium amytal 3 grains at 6 a.m., 3 grains at 7 a.m., morphine $\frac{1}{4}$ grain, and atropine $\frac{1}{150}$ grain at 7:15 a.m. She was taken to surgery at 8 a.m. Under gas-ether anesthesia a left transverse incision was made, about two inches below the costal border. This gave an excellent exposure of the left side of the transverse colon, the splenic flexure, and the first part of the descending colon. Just below the splenic

flexure there were many adhesions, most of which were easily broken down by blunt dissection. There was a large mass of inflammatory exudate covering the anterior part of the bowel. There were two dense bands which extended across the colon above the exudate which, with the exudate caused a partial intestinal obstruction. When all the adhesions had been freed we found a diverticulum about the size of the finger of a rubber glove containing a very hard faecolith in the distal end. The diverticulum was clamped at its base and removed. This was cauterized with phenol and inverted with 3 layers of sutures. The abdomen was closed in the usual manner. During the operation the patient was given 1000 cc. of blood plasma. Upon her return to her room was given 1000 cc. of 10 per cent glucose every eight hours for forty-eight hours. She was out of bed on the fourth day. By the seventh day normal bowel function had been restored. Further recovery was uneventful and she was discharged on the tenth day.

Cancer of the Larynx—a Highly Curable Disease*

Editorial Symposium by Philip J. Bayon,
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CANCER of the vocal cord, if recognized early, is curable in 75 to 95 per cent of the cases; it is curable without loss of vocal function; and it is curable without mutilation. Cancer of the vocal cord always sounds its warning symptom, HOARSENESS, for some time before significant extension of the primary lesion and long before metastasis occurs. As the primary lesion extends beyond the limits of the vocal cord and metastasis begins, cancer of the larynx becomes an increasingly formidable and fatal disease.

The primary lesion of cancer of the larynx may not always arise from the vocal cord; but it usually does. When the primary lesion springs from sites other than the vocal cord, hoarseness may not be as constant an early symptom and metastasis may occur relatively soon in the disease.

From the standpoint of cancer of the larynx and the general practitioner, the many volumes devoted to possible etiological factors, the

quality of the hoarseness and the subject sensations of vocal fatigue may all be politely ignored if the only truly important symptom—PERSISTENT HOARSENESS—will be kept in mind.

If every general practitioner would suspect every patient with persistent hoarseness of being a victim of cancer of the larynx, the responsibility for early positive diagnosis would fall squarely on the laryngologist; and if every laryngologist would properly acquit himself of this responsibility in such cases, carcinoma of the larynx would become one of the most curable of all malignant diseases.

Is every patient who is chronically hoarse a victim of cancer of the larynx? No; but unless the larynx has been visualized from front to back and from side to side, no one is justified in treating hoarse patients for chronic laryngitis, chronic pharyngitis or whatever may be assumed to be the cause of chronic hoarseness. What is chronic hoarseness? Chronic hoarseness is hoarseness which has been present in any given case for more than two weeks.

*Sponsored by the Committee on Education of the Mississippi Cancer Society.

Who can make a satisfactory examination of the larynx? Most general practitioners and many otolaryngologists either cannot or will not make a satisfactory examination of the larynx. A thorough mirror laryngoscopy is not always easy; patience and perseverance are often more important than technical skill but, of necessity, knowledge of the maneuver involved is essential. If by direct, or mirror laryngoscopy, it is impossible to visualize all portions of the larynx, including the apex of the anterior commissure, direct laryngoscopy with a laryngoscope must be performed in order to eliminate or establish a diagnosis of neoplasm in all patients who are chronically hoarse. Once presence of a neoplasm of the larynx has been established by inspection it is

necessary to determine whether the tumor is benign or malignant. Even though an experienced laryngologist can often differentiate between benign and malignant neoplasms of the larynx by the gross appearance of the tumor, histologic examination of tissue from the lesion is the only positive means of determining the true nature of the pathologic process.

When every physician realizes that any of his patients can have cancer and when every patient with CHRONIC HOARSENESS is subjected to a thorough examination of the larynx, cancer of the larynx will then be diagnosed early, the disease will be highly curable, it will be curable without loss of vocal function and it be curable without mutilation.

DIRECTORY

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Wilkinson	S. E. Field, Centreville	F. E. Fyke, Jr., Centreville

*This directory is very incomplete. We are endeavoring to make it informative and up to date. Please advise the editor of additions and changes.

The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

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Address all material for publication to W. H. Anderson, M.D., Booneville, Mississippi.

Editorials

FOUR-YEAR MEDICAL SCHOOL

And now we can rejoice that our four-year medical school is on the way. Our state will now take its place in the medical education sun and medical service will be accelerated to all our people. Our school can and will be one of the best in the nation for training men for general practice. No school in the nation will have a finer location than ours. In the fastest growing city in the Deep South at its cross roads where our T.B. hospital, hospital for mental disease, and our public health service are already located, and a large veterans hospital scheduled, the state has the foundation for a fine medical service.

Through our established hospital system our four-year medical school will be the heart and the soul and the driving power for a continuous medical service to all the people. This school will add to the pride and the dignity

of our people. We should soon be able to supply our state with the very best type of doctors, but we will be able to send some out to practice democratic medicine in other states and in other nations and to carry with them the American way of life. Mississippi will show the way in medical education, or rather in medical service to the people. We are grateful to and for the faithful ones who kept on keeping on for our medical school.

ENGLISH PHYSICIAN TO SPEAK

Dr. Gampbell is scheduled to address the Woman's Auxiliary at our state medical meeting on Tuesday noon, May 9. We want to congratulate the president, Mrs. Gus Street, on securing such an outstanding speaker for this meeting. The Woman's Auxiliary is rendering a wonderful service to the medical profession and to the laity. Mrs. Street is a very fine leader.

At this meeting also the members of the Fifty-Year Club will sit with their guest speaker, Dr. Andy Hall of Mt. Vernon, Illinois. Dr. Hall has been the leading spirit in the Fifty-Year Club of Illinois for many years. He and our beloved Dr. W. A. Evans were devoted friends. Dr. Hall was recently selected by the American Medical Association as the outstanding practitioner of the year. Dr. Hall will bring greetings at this meeting and then will be speaker at the Fifty-Year Club at six o'clock on the same day at the Robert E. Lee Hotel. It is hoped that Dr. Rudolph Matas of New Orleans and Dr. Seale Harris of Birmingham, our out-of-state members, can be with us this year also.

The Academy of General Practice is up for a good meeting on May 8, the day before the state meeting opens. The Academy is going strong and serving a great purpose in our medical economy. Through it the efficiency standard of practitioners is being raised and general practice is on its way to rank as a specialty. Its stand is strong for democratic medicine and the American way of life.

There is a definite relation between the health of the people and the fertility of the soil. The science of farming and that of medicine are in fact closely related.

The challenge to the medical profession is to build health assets, physical, mental and spiritual.

Pediatrics is on the march in our state. We have some outstanding men in this field and it is fitting that our state move forward in this field since it has so many fine babies and children. Dr. Harvey Garrison, Sr., is generally looked upon as the father of pediatrics in the state. He has been active in the state organization as well as the Southern and the American Medical. It is fitting now that obstetrics and gynecology go forward as it is doing. Their program each year is unusually good.

The Northeast Mississippi Medical Society, under the fine leadership of President M. Q. Ewing appointed a committee to select a button for its members of the Fifty-Year Club. The society gave instructions to the secretary to pay for same for every person within its territory who has been admitted to the Fifty-Year Club. At a recent meeting the button selected was presented to the society and it was adopted. Incidentally, the die is practically the same as that used by the state of Indiana. Gold-plated and of very attractive design, the cost of each button is about \$3.40.

The buttons for the Fifty-Year men in the Northeast Mississippi Society have been secured and are being delivered. This society hopes that other component societies of the state association will adopt this button as its official badge of honor to these noble men. If your local society wants to present this button to your Fifty-Year men, please notify the editor and we shall be glad to order them for you. Perhaps the best solution would be for the state association to adopt the button at its next meeting and provide means to pay for one for every member who is taken into the Fifty-Year Club.

We have a fine number of exhibitors coming for the state meeting. Be sure to visit them May 9, 10, 11, at the Robert E. Lee. They work in cooperation with the medical profession and have their ideals of service. The interest of the medical profession and the exhibitors should be mutual.

KAY REMODELING

Kay Surgical, Inc., is announcing a remodeling of the entire building in Memphis, including the warehouse. Although no interruption of business or shipping is expected, the improvements will provide a better service and enable a larger stock of merchandise. A new parking area is also arranged for convenience and accessibility.

THE GAY TREATMENT FOR ASTHMA

In response to an inquiry, Dr. Fred S. Gay, Biloxi, Miss., has written that he does not use any specific new method of treatment of asthma. He endeavors to correct any abnormality that may exist, paying particular attention to the gallbladder and kidneys.

Patients are carefully examined and given the medication which according to Dr. Gay's judgment is indicated in each individual case. Most patients are given some form of calcium, such as calcium lactate or some of liquid calcium, such as Calmulsion, in varying quantities and a prescription containing Fowler's solution and potassium iodide in varying quantities figured according to age, weight and general condition of patient. To this is added where and if indicated small quantities of digitalis or phenobarbital put up in a vehicle of plain water, sometimes sweetened and sometimes colored red with an inert coloring substance of no medical value. In addition he oftentimes gives an oil solution of amphetamine solution, 2 drachms to 2 ounces of light petrolatum for nose drops and insists that the intestinal secretions be kept acting well at all times, for which he recommends a tablet containing pure bile salts and cascara, such as Colopo Tablets, made by the G. W. Carnrick Company.

Dr. Gay supplies the medicine to his patients in most cases and requests that they report their general condition, weight and other details to him by mail at regular intervals and directs them as to procedure over a period of two years or more and claims that more than 90 per cent of his patients report improvement and in a large percentage complete relief from asthma within a two-year period. He uses no ephedrine nor opiates but allows all patients to take any temporary relief medicines at any time if needed, including epinephrine, aminophylline and ephedrine.

—From the Journal of the American Medical Association, Volume 130, No. 6, Feb. 9, 1946—Queries and Minor Notes.

M. A. OF O. AND G.

The Mississippi Association of Obstetricians and Gynecologists will hold its semi-annual meeting in the Robert E. Lee Hotel on Wednesday, May 10, at 11:00 a.m. in the Directors Room.

At 12:30 that afternoon the banquet will be held in the Robert E. Lee Hotel and total cost of banquet per person will be \$2.25 including tips.

Interpreting Medical Literature

Staff of Review

Dermatology—James G. Thompson, Jackson

Otolaryngology—Charles R. Hume

Ophthalmology—Edley Jones, Vicksburg

Obstetrics and Gynecology—J. F. Lucas, Greenwood.

Orthopedics—Thomas H. Blake, Jackson

Public Health—Felix J. Underwood, Jackson

Pediatrics—Harvey F. Garrison, Jackson

Radiology and Roentgenology—Karl O. Stingily, Meridian.

Pathology—R. M. Moore, Vicksburg

Surgery—W. H. Parsons, Vicksburg

Urology—Temple Ainsworth, Jackson

PEDIATRICS

FOOD SENSITIVITY IN 100 ASTHMATIC CHILDREN—Lewis Webb Hill, Children's Hospital and Harvard Medical School, Boston, Mass., New England, J. Med. 238:657-59, May 6, 1948.

"Food sensitivity plays a definite, although small role in childhood asthma. One hundred children from 3 to 12 years of age were tested by the scratch method; 35 reacted positively to one or more foods. In the 65 negative reactors, the asthma could be attributed to sensitization from environmental allergens or recurrent respiratory infections. There were 218 positive scratch tests: in 44 (20 per cent) the food in question could produce an asthmatic attack, and of these, 38 were accounted for by egg white, fish, peanut, walnut, and chocolate. In 16 (8 per cent), the food caused mouth irritation, vomiting, urticaria and angioneurotic edema but not asthma; in 158 (73 per cent), the positive reacting foods produced no symptoms."

COMMENT: It has been our experience that skin testing on this type sensitivity has been very unsatisfactory.

Anthallan Therapy in Infantile Eczema—Martain S. Kleckner, Jr., (Capt., M.C. A.U.S.), Allentown, Pa., Am. Pract. 11:639-42, June 1948.

"Nine infants with eczema are described who were treated with relatively large doses of the antihistaminic drug anthallan for a period never shorter than four weeks. With all, the therapeutic result was stated to be satisfactory and persistent. Anthallan was found devoid of

toxic side effects. Most of the cases had failed to improve while under various other therapeutic regimens."

COMMENT: In our experience, antihistaminic drugs have very little influence in the treatment of eczema. It is largely one of change of feedings, and usually that will correct the condition if properly done..

VA CLINICAL PATHOLOGY

P. I.: The patient, a 28-year-old white soldier without foreign service, had a "head cold" for 2 weeks. Prior to admission he began having generalized abdominal distress particularly in the right upper quadrant. He had vomited twice. There was no history of previous illness, no excessive use of alcohol.

F. H.: Irrelevant

P. E.: The throat was acutely infected. There was slight protective spasm of the muscles of the right upper quadrant of the abdomen. No other abnormalities were noted. WBC 8,800; polys 63, lymphs 30. Urine negative.

Course: On the second day after admission the abdomen became acutely tender and rigid, the clinical aggravation paralleling the leukocytosis: WBC 29,100; polys 83, lymphs 17. At laparotomy on the same day the gallbladder was found to be gangrenous. It contained many soft small calculi, which were removed, and a multiple opening drain was sutured into place.

Over the next five days the patient's condition improved somewhat. Then rather suddenly he became drowsy and confused. The site of the operation was not abnormal, though drainage was slight. Seven days after operation the neck became stiff. The superficial and deep reflexes of the abdomen and lower limbs were found to be considerably diminished. No other signs of CNS involvement were present. Spinal fluid findings: WBC 123 per cu. mm.; polys 28, lymphs 72; globulin one plus, sugar 213 mg.%. Sulfonamide therapy was instituted and the blood level on the fourth day of treatment was 8.2 mg.%. The course continued to be downhill, the urine became bloody, respiratory embarrassment developed, and death occurred 12 days after admission.

Sulfonamide therapy was instituted and the blood level on the fourth day of treatment was 8.2 mg.%. The course continued to be downhill, the urine became bloody, respiratory embarrassment developed, and death occurred 12 days after admission.

Abstract of Discussion

The pleocytosis of the spinal fluid, stiffness of neck, and drowsiness of the patient were interpreted by Dr. L. Elson as signs of meningitis which, as indicated by the spinal fluid lymphocytosis, would be of a non-purulent

type, such as tuberculosis, luetic, virus, or aseptic meningitis. Due to the antecedent cholecystitis and surgery, aseptic meningitis due to metastatic brain abscess was assumed as the most likely diagnosis. The high spinal sugar could only be explained as due to intravenous glucose therapy shortly before spinal tap. Dr. J. V. Cockrell considered the possibility of typhoid meningitis secondary to typhoid cholecystitis. Dr. N. Burnstein explained the hematuria on the basis of sulfonamide crystalluria. Dr. A. J. Gavigan pointed out that

this case showed a very rapid fatal course which generally is more protracted in brain abscess.

Anatomical Diagnosis

(H. N. Naumann, M.D.)

1. Acute anterior poliomyelitis
2. Status after cholecystomy; gangrene of gall-bladder
3. Sulfonamide nephrosis

State Board of Health

Felix J. Underwood, M.D.

THE FIGHT AGAINST CANCER*

(The doctor talks to the layman)

The month of April has been designated Cancer Control Month and it is likely that the average person will be made aware of the needs and developments in this field as in no other month of the year. Not that the problem becomes more crucial during this particular month, but there is need for a special period of intensification of effort in combatting this great killer. Everyone can help and the efforts and contributions of all are needed. Last year cancer took a toll of 200,000 American lives, and in our own state of Mississippi, more than 2,000 died of this dread disease.

It is believed that cancer will ultimately be stripped of most of its mystery and that specific methods of cure and prevention will be developed, just as have been done for the once baffling maladies of smallpox, yellow fever, pneumonia, diphtheria, typhoid fever, and many others. The amount of research that is taking place throughout the country is enormous and its continuance is dependent upon a generous public.

The Committee on Growth of the National Research Council in its 1949 Report to the American Cancer Society, records the following noteworthy research advances in our knowledge of cancer:

1. New evidence relating to changes in blood serum of cancer patients, opening up the possible development of a practical blood test for cancer.

2. Evaluation of anti-folic acid compounds as a treatment of definite but limited benefit in the treatment of acute leukemia.

3. Discovery of the vast potentialities of the hormones, ACTH and cortisone, in the treatment of rheumatism and other diseases, and preliminary testing of these drugs in cancer.

4. Discovery that a new chemical compound (guanazolo) will inhibit the growth of certain types of cancer in mice without apparent toxic effects to the animal.

5. Further evidence that chemical agents which produce "environmental cancer" also cause changes in the hereditary pattern of the body's cells.

The report points out that "the ultimate objective of scientists engaged in cancer research—though they must predicate their advances on a free pursuit of knowledge, and though many of their interests may seem obscure and worlds removed from the bedside scene—is the same as that of the cancer patient, his family and his physician. The objective is to find means of eliminating cancer as a health problem and meanwhile relieve suffering and increase the individual's years of useful life to the utmost."

Cancer research may be described as an effort to understand the normal processes of growth—the growth which takes place when a single fertilized cell develops in a human being—the growth of special tissues like muscles, nerves, blood vessels, glands, skin and bone—the growth by which tissues are repaired and by which cells that die are replaced by

new cells. This is normal growth. But there is another kind of growth—useless, insidious, destructive. That is cancer.

Normal tissues are useful and work in harmony with each other for the welfare of the whole body. Cancer tissue serves only its own purposes: to thrive at the expense of normal tissues, to steal their blood supply, destroy the nerves, crowd out and consume the useful tissues, and to seed the whole body with cancer cells which corrupt and kill.

What causes cancer? What prevents it? What can cure cancer? These are the questions research seeks to answer—and these are not \$64 questions—they are two billion dollar questions. That amount, conservatively, is what cancer costs each year in dollars and cents, to say nothing of the far greater cost in pain, heartache, lives lost, and disrupted homes.

Hundreds of scientists, financed by the American Cancer Society, are seeking these answers. They are working with funds contributed by you, your neighbor, and many others who have a share in this problem. Layman and scientist alike are united in their objectives and with this sort of cooperation on an unprecedented scale, there is real hope for progress.

Recent improvements in surgery, radiation technics, and control of shock have made possible a greater cancer cure rate. Even cancers of the lung and of the stomach, until recent years considered hopeless, are responding to treatment in an increasing percentage of cases. Through a growing number of chemicals found to be effective, pain is prevented and the life of even the incurable patient is lengthened by many months and years. Research has even found a way to ease the unbearable pain of a few types of cancer that once caused indescribable torment.

Research has produced limited benefits for those with far-advanced cancer, but for the fortunate patients whose cancers are discovered during the early stage, before cancer cells have broken loose from a malignant tumor and traveled to other parts of the body, research has accomplished much more. More than 80 per cent of some early types of cancer can be cured, if detected and treated adequately in the beginning stage. Skin cancer, as a rule, is not much of a problem at all, when diagnosis and treatment come early. In addition to the well-known methods of treatment, certain chemicals have been found to completely destroy skin cancer without injury to normal tissue. Early cancer of the breast, larynx,

rectum and uterus also yield readily to prompt and proper treatment. Working steadily and effectively all over Mississippi is a powerful fighting machine, an army of sincere, earnest men and women mobilized to combat cancer. These volunteer workers are not selfishly concerned with only their own welfare or that of their family. Most of us, deep down in our hearts, have the feeling that "it won't happen to me." Even so, in the concern for our neighbors and friends, or for hundreds of people we may never know personally, we may at the same time be protecting ourselves by providing funds for cancer control.

A few years ago one of our nurses went into a home to look after a school child who had had a long and severe illness. During her visits she noticed that the father had a condition that might mean cancer. Accordingly as soon as she had won the friendship and confidence of the family, she mentioned the symptoms to both father and mother, discussed what such symptoms might indicate, and prevailed on him to go to his physician for examination. Briefly, that man did have a cancer in the early stages; he secured adequate treatment without too much difficulty through the nurse's assistance in putting him in touch with agencies that could help him financially, and now that man is well, active and able to make a good living for his family. There are many other equally heart-warming experiences public health workers have had in tracking down cancer.

Finally, I should like to sound one word of caution for laymen everywhere. Look to your physician, your local cancer society, or your health department for trustworthy advice as to the facts about cancer. Do not in desperation grab at a straw and become the gullible victim of one of the numerous "cancer quacks" operating at large, who makes extravagant promises of cures and who exploits hopeless cases for personal gain. When better methods of treatment are available they will in the true scientific tradition become world property for the benefit of mankind everywhere. Your physician and health officer will learn the details through their current medical journals where scientific advances are routinely recorded, and you as a layman will learn of it through the reports of a responsible press.

In the meantime your dimes and dollars will help speed the day when these advances in control and cure can be realized. Give generously to your local cancer drive. **Cancer can strike anyone, but you can strike back!**

Woman's Auxiliary

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CENTRAL MEDICAL AUXILIARY

New officers for the coming year were elected by members of Central Medical Auxiliary as follows: president, Mrs. A. J. McIlwain; vice-president, Mrs. O. P. Myers; secretary, Mrs. Curtis Caine; treasurer, Mrs. Joe Melvin, Jr.;

parliamentarian, Mrs. George Townsend; historian, Mrs. Johnson Witt.

The Auxiliary agreed to honor its doctors with a barbecue and square dance at Battlefield Park on Friday, April 28, although March 30 is Doctors' Day. This date was set officially by the Southern Auxiliary in memory of that March 30, 1842, when Dr. Crawford Long successfully used ether as anesthesia.

After the business session, members and guests were invited into the beautifully appointed dining room where refreshments were served by the following hostesses: Mrs. T. G. Ross, Mrs. F. G. Bartley, Mrs. Ray Biggs, Mrs. Henry Boswell, Mrs. John Howell and Mrs. John Howell, Jr., of Canton, Mrs. Warren Jones of Forest, Mrs. E. G. Kemp, Mrs. Joe Mulhern, Mrs. Lee Reid, Mrs. George Townsend of Morton, Mrs. Victor Watson of Brandon, Mrs. T. D. Holloman, Mrs. R. M. Seawright of Bolton, Mrs. W. B. Weiner, Jr., Mrs. O. G. Eubanks, Mrs. R. B. Ireland, Mrs. W. L. Jacquith, Mrs. Norman Burnstein.

TRI-COUNTY AUXILIARY

In Brookhaven at the Inez Hotel members of the Tri-Counties Medical Auxiliary had a luncheon meeting on March 14 at twelve-thirty, with Mrs. W. W. Crawford of Tyler-town presiding. Mrs. Augustus Street of Vicksburg, state president, was the guest speaker.

Mrs. Street's message, which followed a delightfully planned luncheon, emphasized the need of doctors' wives feeling that the evolutionary trend toward socialization is a personal challenge. "Let us know ourselves how this threat works and show every women that her liberties are involved as much as doctors' wives," she said, urging members to participate in community groups with enlightened information.

EAST MISSISSIPPI MEDICAL AUXILIARY

An excellent attendance marked the March 16 meeting of the East Mississippi Auxiliary. Mrs. Augustus Street of Vicksburg, and Mrs. W. H. Anderson of Booneville were guests, each bringing messages of pertinent concern to the group.

Following a delicious dinner menu at the Lamar Hotel, Mrs. John T. Bryan, president, presented the speakers. Mrs. Street's announcement that Dr. Campbell, English physician seeking to escape the evils of socialized medicine in Britain and awaiting citizenship papers in the United States, will be the guest speaker in May at the annual meeting, received enthusiastic approval.

The Acute Abdomen*

PHILIP THOREK, M.D., F.A.C.S.†
Chicago, Illinois

THE subject of the acute abdomen will always present an interesting challenge to the practitioner and surgeon alike. I have examined charts from the surgical services at the Cook County Hospital for a period of ten years, the purpose being to determine which diseases are mistaken more frequently in the acute abdomen. To my surprise, I did not find fifty or seventy-five conditions which confuse us, but rather six outstanding ones that we mistake most frequently. These six conditions are:

1. Acute Appendicitis
2. Acute Cholecystitis
3. Perforated Peptic Ulcer
4. Acute Hemorrhagic Pancreatitis
5. Renal Colics
6. Coronary Occlusion

There is a seventh disease which deserves special consideration, namely, salpingitis. Acute or chronic salpingeal pathology is frequently associated with a perihepatitis which produces pain in the right upper quadrant (pseudo-gallbladder pain). Because of this, gallbladder explorations and other surgical procedures have been done in cases of salpingitis, resulting in danger to the patient and embarrassment to the surgeon.

To make a diagnosis one must have a simple and workable plan in mind. Our plan consists of our headings, namely, history, present symptom complex, physical examination and laboratory data. This routine has served us well and we utilize it daily.

Acute Appendicitis

The more one sees of acute appendicitis, the more one respects the condition. The statement "only an appendix" is indeed a dangerous one. This condition is most frequently found in individuals under the age of forty and is somewhat more common in males. It will be recalled that gallbladder conditions appear most frequently after the age of forty. The story the patient relates is usually quite stereotyped. To

put it in his language: "Something I ate gave me a belly-ache." This is his way of describing acute epigastric distress. When he gets this "belly-ache" he often attempts to obtain relief with either a cathartic or an enema. Within the first twenty-four hours his "belly-ache" becomes a soreness low on the right side. His acute epigastric distress has become localized to the right lower quadrant. The "two-question test" is both useful and time-saving. Question Number 1: "Where was your pain when it started?"; to this interrogation the patient points to his entire abdomen. Question Number 2: "Where does it hurt you now?"; he then points to the right lower quadrant, usually McBurney's point. This simple method of having the patient demonstrate diffuse pain which localizes to the right lower quadrant will diagnose the vast majority of cases of acute appendicitis.

Nausea and vomiting have been impressed upon us as being associated with appendicitis. This is the exception and not the rule. Anorexia, or loss of appetite, is more constant and more important than either nausea or vomiting. Anorexia, nausea and vomiting are three degrees of one symptom; anorexia is the mildest form and is associated with mild distention of the appendix; nausea, the middle degree, is due to moderate distention; and vomiting, the maximum degree, is found in greatly distended appendices. The most common symptom in acute appendicitis is anorexia, and if the patient states that his appetite is not altered we doubt the diagnosis of an acute appendix. Two complaints which are extremely rare in acute appendicitis are diarrhea and chills. These are probably found in less than one per cent of the cases. Constipation is the rule.

Fever is not an early finding in acute appendicitis; in fact, if present it is suggestive of peritoneal soiling. It is true that cases of acute appendicitis may have a fever of 102° or 103°, but these are no longer cases of appendicitis; they are cases of far advanced peritonitis. Children prove the exception to this rule. If appendices could be operated upon when the temperature is below 99° the mortality would be very low.

Acute appendicitis does **not** give right rectus rigidity. Although the reverse is taught in

*Presented at the sixty-first annual session of the Mid-South Postgraduate Medical Assembly, Memphis, Tennessee, on February 15, 1950.

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many schools and text books, this point should be clarified. It is impossible for an individual to contract his right rectus muscle without contracting the left; therefore, when pressure is made upon an inflamed area, both rectus muscles contract. When only one rectus is rigid it suggests an underlying mass, such as a tumor or abscess. When both recti contract to pressure it should be considered "muscular defense" rather than right or left rectus rigidity. The importance of this bears emphasis when we realize that diagnosis, treatment and prognosis may depend upon the presence of right rectus rigidity or simple muscular defense.

The iliopsoas and obturator signs are not signs which diagnose acute appendicitis, but rather locate an acute appendix. Probably a misconception has arisen because these signs are usually discussed under the heading of acute appendicitis; they may, however, be produced in other diseases. The right iliopsoas sign is elicited by placing the patient on his left side and hyperextending the right leg. If positive, pain is produced over the iliopsoas fascia which will be manifested in the region of the right lower quadrant. In the presence of a history of acute appendicitis this would signify that the inflamed appendix is overlying the iliopsoas fascia and is retrocecal. A positive obturator sign will locate an inflamed pelvic appendix. It is conducted in the following way: with the patient on his back the thigh is flexed upon the abdomen and the leg upon the thigh; the leg is then abducted. This causes internal rotation of the thigh and stretches the obturator internus muscle. If this produces pain it is diagnostic of a fasciitis involving the obturator fascia, which could be caused by an inflamed tube, appendix, ovarian cyst, etc. If the patient elicits a history of acute appendicitis with a positive obturator sign, we conclude that the appendix is low-lying and in the pelvis. Rovsing's sign is also helpful. It is elicited by pressing over the left cecum, the colonic gas which has been pushed to the right will produce pain over the cecal region; this is quite diagnostic of acute appendicitis.

Routine bi-digital examinations are done; at times an acute appendix or appendiceal mass may be felt. Late and neglected appendices may produce a pelvic abscess which points rectally or vaginally, and this examination reveals the proper site and time for incision and drainage.

The laboratory data usually consist of a white blood count and a urinalysis. More im-

portant than the white blood count or urinalysis is a differential blood count; this is easy to do and is more accurate. If the "poly" count is high, we assume that an acute infectious process is present; a high "poly" count in the presence of a low white count means a poor prognosis. The urinalysis is usually negative but may be misleading; a few red cells in the urine are not a pathognomonic of renal pathology. Negative urines have been recorded where a renal stone completely blocks the ureter so that no blood or pus can pass into the bladder.

Acute Cholecystitis

The dictum that certain types of people are predisposed to certain types of diseases seems to be correct. The gallbladder type is described as fair, fat and forty, usually being a female in the latter third or fourth decade and somewhat obese. There is always an exception to the rule; hence, the most fulminating hydrops of the gallbladder on our service was seen in a young, thin boy of sixteen. The age of forty is related to a previous history of pregnancy, and this is theoretically explained in the following way: the average female has her children in the second decade of life and while pregnant she develops a physiologic hypercholesterolemia. Some of this cholesterol deposits on the mucous membrane of the gallbladder, forms polypi which break off and become the nuclei for stones. It may take from ten to twenty years for gallstones to attain any appreciable size, so that by the time she reaches her fourth decade the stone is large enough to obstruct or irritate. Nulliparous women can also have gallstones or gallbladder disease, but this, too, is the exception and not the rule.

The history of recurrent attacks of abdominal pain in a middle aged female, so severe that the physician must administer a sedative, is an acute gallbladder until proved otherwise. Acute appendicitis does not require morphine; renal colics will be differentiated presently, and coronary occlusion is rare in the female. One of the most unusual lesions noted in the female is a perforated peptic ulcer. The gallbladder patient also presents a previous history of "selective dyspepsia." By this we mean that there are certain specific foods that she cannot tolerate. There are four primary offenders to these foods: they are fried and fatty foods, raw apples, cucumbers and cabbage. The patient does not use the term "dyspepsia," but describes this distress as the two "B's": namely, bloating and belching. To summarize and

describe the gallbladder patient one may use an alliteration and state that she is the patient with the seven "F's": She is the Fair, Fat, Fertile, Flatulent, Flabby, Female of Forty.

The complaint is one of pain, and it is important to determine the type of pain which is present. A constant pain is due to edema, but colicky pain is caused by obstruction. This is one of the factors which indicate whether the case should be treated conservatively or surgically. It is unwise to treat an obstructed lesion conservatively since these are cases which result in early gangrene and perforation. Morphine should not be used in gallbladder disease because it is a smooth muscle contractor, and since the gallbladder is a smooth muscle organ one should not administer a medicament which would stimulate its activity. By increasing muscle tonus, morphine may actually aggravate or provoke gallbladder pain and colic. One should not state, however, that the drug must never be used in gallbladder disease, since it still has its place, namely, to prevent shock. These patients are treated first with nitrate therapy. One breaks an amyl nitrate bead and lets the patient inhale the vapors; 1/100th grain of nitroglycerin is placed under the tongue, and 3 grains of sodium amytal or any other barbiturate is given by mouth. If this gives no relief we administer a hypodermic which consists of 100 mg. of demerol and 1/100th of a grain of nitroglycerin. Should these measures fail, antispasmodic therapy with such drugs as papaverine, aminophylline, et cetera, is tried. Morphine is used only after all other measures have failed.

Gallbladder pain is usually located under the right costal margin, but may be referred to the stomach since these two organs originate from the same embryologic segment. The stomach responds to this stimulus in one of these types of gastric spasms: (1) pylorospasm, (2) mid-gastric spasm and (3) cardiospasm. If a pylorospasm is produced the gallbladder condition might be confused with peptic ulcer; if mid-gastric spasm results, a stomach carcinoma may be erroneously diagnosed; and if associated with cardiospasm, the pain appears on the left (pseudocoronary pain) and coronary disease may incorrectly project itself into the diagnostic picture.

Referred pain should not be confused with radiation of pain. By radiation we mean that gallbladder pain, located under the right costal margin, may radiate along the path of the seventh intercostal nerve to the inferior angle of the right scapula, or the interscapular re-

gion. Gallbladder pain, therefore, cannot radiate to the right shoulder. Shoulder pain is an entirely different mechanism which involves the phrenic nerve and is indicative of peritonitis. When a gallbladder patient has true shoulder pain a diagnosis of gangrenous or ruptured gallbladder with biliary peritonitis should be made.

Temperature, pulse and respiration are included under the heading of physical examination. The patient with an acute gallbladder has an early high fever, hence, a temperature of 102° is not unusual with the first twelve to twenty-four hours of acute cholecystitis. The early fever is explained by the absence of a submucosa. Since this tough resisting layer is lacking, there is greater chance for early contamination and absorption in the peritoneal cavity. The patient has a pulse which is increased according to the temperature; therefore, for every degree rise in fever there will be approximately a ten beat increase in pulse rate. Respiration is slightly increased because breathing is painful. This is due to the fact that the inflamed gallbladder rubs against the sensitive parietal peritoneum; because of this, acute gallbladder disease may be confused with pneumonia or pleurisy.

Although pain, a symptom, may be referred anywhere along its nervous path, tenderness, a physical finding, remains at the site of pathology. This is an excellent diagnostic rule having few if any exceptions. The tenderness of gallbladder disease will be located in the region of the right costal margin. If it is most marked on a level with the umbilicus, it may be difficult to determine whether the condition is an inflamed, low-lying gallbladder or an acute high-lying retrocecal appendix. Two ways aid the differentiation of these two conditions. First, we recall that the normal abdomen reveals a tympanitic note to percussion in all four quadrants. If the tenderness opposite the umbilicus is due to an inflamed gallbladder, we assume that the organ is unusually large or that a ptotic liver with an inflamed gallbladder at its free border is present. This would cause an obliteration of the normal tympany in the right upper quadrant and in its place the percussion note would be one of dullness or flatness. If the patient presents tenderness on the level with the umbilicus and retains the normal tympany in the right upper quadrant, this would point to a high-lying retrocecal appendix. Another method of differentiating the gallbladder and appendix is by means of Ligat's test. This test locates areas of hyperesthesia over an inflamed organ. If the tenderness is due to gallbladder disease an area of hyperes-

thesia (elicited by picking up the skin and letting it drop) is present from the umbilicus upward to the right costal margin. If the tenderness is due to an acute appendix, the area of hyperesthesia will be found from the umbilicus down to Poupart's ligament.

A rectal examination is done as a routine in every physical examination. More important than the rectal or vaginal examination is a so-called bi-digital, which is conducted by placing the index finger in the vagina and the middle finger in the rectum with the perineum in between. This will immediately orient the examiner and adnexal pathology will be revealed.

A flat x-ray film should be taken in every acute abdominal condition. One may determine whether a calcified gallbladder or visible stones are present. It also gives an indication as to whether or not the liver is enlarged or ptotic. Routine laboratory tests are done.

Perforated Peptic Ulcer

This condition is rare in females. Usually a previous history of peptic ulcer or hemorrhage can be obtained, but the onset may be with perforation.

The patient states that he was seized with a sudden pain, usually after eating; this was so severe that it doubled him up. The classical picture of perforated peptic ulcer with board-like rigidity and a shock-like syndrome is too well known to bear repetition. Two signs which should be sought for in every case, however, are: (1) the findings with auscultation, and (2) the presence of a pneumoperitoneum. Auscultation reveals an absolutely silent abdomen when an ulcer perforates, leaks and soils the peritoneal cavity. This is not new, since the late J. B. Murphy stressed the importance of this finding many decades ago. When intestinal sounds are present, the diagnosis of perforated peptic ulcer is remote. There are exceptions, and one of these will be discussed presently under the subject of forme fruste ulcer. The next sign which helps clinch the diagnosis is the demonstration of a spontaneous pneumoperitoneum. Normally a magenblase or stomach air bubble is present. When an ulcer perforates, this air bubble escapes into the general peritoneal cavity, and can be demonstrated either by percussion or with the fluoroscope; the latter is by far the more accurate. The patient is placed on his left side so that the free air bubble may gravitate upward between the liver and the right hemidiaphragm. By so doing, the liver is displaced downward and is separated from the diaphragm. Normally the liver hugs the diaphragm and no air space is visible between them. If this air is of an

appreciable amount, normal liver dullness is obliterated and in its place a tympanitic note is produced by percussion. The sign is easy to demonstrate, quite pathognomonic of perforated peptic ulcer, and present in about seventy per cent of all cases.

The forme fruste ulcer deserves special mention. The term refers to a pin-point perforation in the stomach or duodenum which is immediately sealed over by muscular contraction or by the overlying liver. Therefore, the spillage is minimal and the amount of peritoneal soiling is small. Such patients may experience a sudden sharp pain in the epigastrium, but the typical physical findings are lacking. This patient may be able to straighten up and walk about. Abdominal sounds are usually present and the air bubble may remain intragastric, having had no chance to leave the small perforation. These patients, therefore, present a misleading picture and have been misdiagnosed. However, with the ingestion of their next meal they usually reperforate and then present the typical findings.

The temperature, pulse and respiration will depend upon whether or not shock is present. Most perforated peptic ulcers present a shock-like picture which varies in its intensity. The shock associated with perforated ulcers responds rapidly to therapy. Within a few hours, the classical picture of peritonitis develops with the associated increase in temperature, pulse and respiratory rate.

The contents from a perforated ulcer may pass downward along the so-called "paracolic gutter of Moynihan," pool around the appendix and produce exquisite tenderness at McBurney's point. The diagnostician must then be on his guard, since such a history would suggest an epigastric distress with localization to the right lower quadrant which could be confused with an acute appendix. Upon exploratory operation, free fluid will be found in the peritoneal cavity with all signs of a peritonitis, and a red and injected appendix seen and removed. These patients usually die if the leaking ulcer is overlooked. This catastrophe can be avoided if, before closing the abdomen, the appendix is opened and the mucous membrane examined. Since acute appendicitis starts in the lumen of the appendix and travels outward, a normal appearing mucous membrane would suggest looking elsewhere for the cause of the peritonitis.

Laboratory data include the flat x-ray film which has been discussed under the subject of spontaneous pneumoperitoneum. Routine blood count and urinalysis are done. Some of these patients might have bled, and although per-

forated ulcers are known not to produce massive hemorrhage, signs of a secondary anemia may be present.

Acute Hemorrhagic Pancreatitis

It is important to recall that this disease may appear in one of two forms: either acute edematous pancreatitis or hemorrhagic pancreatitis. The former presents a mild clinical picture, but the latter which is associated with fat necrosis and occasionally a hemorrhagic peritonitis produces a fulminating one. The acute edematous form usually improves rapidly without therapy within 48 hours, but hemorrhagic pancreatitis gets progressively worse and often requires surgical intervention. It is the hemorrhagic type, therefore, which is important to identify and treat promptly.

Although the etiology of pancreatitis is unknown, there seems to be a mechanical factor which is associated with Spasm, Stones, Swelling and Stasis. Recent work seems to emphasize the relationship between acute pancreatitis and acute cholecystitis. This seems to be due to a common factor which is an obstruction distal to the junction of the pancreatic and common bile ducts converting them into a "common channel." An actual reflux of pancreatic juice into the gallbladder during an attack of acute pancreatitis has been shown. The patient who develops acute pancreatitis is usually of the same type that develops gallbladder disease, therefore, the condition is more common in females, rarely occurring before the age of forty, and is seen in stout people. The ratio of colored to white is 1 to 50. The attack usually follows the ingestion of a heavy meal. The pain is dramatic, sudden and excruciating; it is felt in the epigastrium, and radiates into one or both loins. In this way pancreatic pain radiation resembles an inverted fan. When the patient sits up or lies on his abdomen, the pain is relieved, and is aggravated when he is on his back. Hence, in most pancreatic conditions, be they tumors or inflammations, the patient is usually found laying on his abdomen or in a sitting position. Reflex vomiting or retching almost always occur; emesis which is truly reflex in nature is never feculent.

Physical examination reveals a patient who is usually in shock with cold and clammy extremities, subnormal temperature, and a rapid, thready pulse. Local epigastric tenderness is almost always present and is associated with a type of muscular defense which is localized to the same area. The rigidity is not truly board-like in nature, and the tenderness is most marked midway between the umbilicus and the xiphoid. An occasional finding is

ecchymosis in one or both loins, or at times around the umbilicus. This is due to extravasated blood which finds its way around the retroperitoneal space and presents itself as greenish yellow or purplish discolorations. This finding, however, takes two or three days to appear. Mild jaundice is present in about half of the cases; this is explained by the fact that the common duct is pressed upon by a swollen head of the pancreas. Abdominal auscultation usually reveals a quiet but not silent abdomen.

Laboratory findings may be helpful in the diagnosis. An increase of serum amylase is specific in the acute phase, although a normal reading does not rule out acute pancreatitis. Polowe has emphasized the importance of determining the blood amylase activity in terms of cuprous oxide precipitation. He has shown that moderate to marked blood amylase activity is almost always associated with diseases of the pancreas, and normal or decreased blood amylase almost always excludes pancreatitis. Hypocalcemia is usually present and the level found is usually below nine. A flat x-ray film of the abdomen may reveal a separation of the upper and lower limbs of the duodenum brought about by an edema of the head of the pancreas. This latter finding is unusual.

Renal Colics

Stones are not the only substance which produce renal colics, since the same syndrome may be produced by a small blood clot, inspissated pus, uratic debris, or a kinking of the ureteropelvic junction in a ptotic kidney.

The condition is more common in males, and the patient may reveal a history of previous attacks, a hereditary influence, a story of gout, or parathyroid pathology.

The patient complains of a sudden pain which starts in the lumbar region and radiates to the testicle, vulva or the inner aspect of the thigh. With this pain he becomes extremely restless and thrashes about. A patient who is experiencing a colic is restless and moves about, but one who has a peritonitis lies perfectly quiet and resents being moved. Vomiting is a common symptom, as is a frequency of urination. During the act of micturition the pain may be altered.

Physical examination rarely reveals any elevation in temperature, but extremely characteristic of the condition is a bradycardia. It has oftentimes been stated that when a patient with an acute abdomen has "a clean tongue and a slow pulse" he has a renal colic until proved otherwise. Tenderness is most marked in the region of the twelfth rib of the involved side,

and to elicit this finding it is unnecessary and cruel to utilize any type of "punch" test. The tenderness is so exquisite that mild percussion will demonstrate it. We prefer to use the term "Murphy tap" to "Murphy punch." A zone of hyperesthesia is usually found posteriorly at the level of and slightly below the twelfth rib. If this area is anesthetized with novocaine, the hyperesthesia and pain disappear.

A flat x-ray film may reveal a stone if such is present, but this is not reliable since non-opaque substances may also produce kidney colic. An intravenous pyelogram can be made without disturbing the patient, and if necessary, the films can be taken at the bedside with the aid of a stationary grid. The significant finding for a diagnosis of a stone in the ureter is the anuria which may be present on the affected side; the opposite side shows normal excretion. The kidney on the affected side usually appears increased in density since the dye in these tubules is more concentrated. This finding is sufficient for diagnosis of non-opaque stones in the ureter. A catheterized specimen of urine usually reveals pus, blood and albumin. The presence or absence of pus and blood in the urine is not pathognomonic since a stone may completely block the ureter and result in a normal urine. On the other hand, an inflamed appendix may be attached to the ureter, kidney or bladder, resulting in a secondary ureteritis, nephritis or cystitis with an associated hematuria. In such instances the laboratory report may actually be misleading.

Coronary Occlusion

Although this belongs to the realm of the internist, the general practitioner as well as the surgeon must be on his guard to avoid the fatal error of confusing an acute coronary disease with an acute abdominal condition.

Men are most susceptible to this condition, and it is usually found in those past the age of forty. A previous history of dyspnea or pain in the chest during exertion or excitement may be elicited. The attack is sudden, with severe pain in the chest which radiates out the left arm towards the abdomen or both shoulders.

There is a sense of impending death with severe fright which usually supercedes the complaint of pain. The radiation may also be toward the epigastrium, so that the examiner's attention is directed to the abdomen rather than the chest. A usual complaint during such an attack is one of "indigestion." Although the pain of acute coronary disease may occur in the abdomen, it does not become localized; hence, no area of local abdominal tenderness is ever found. Marked abdominal distention may be present in coronary pathology, but muscle defense or rectus rigidity are lacking. In abdominal catastrophes the patient lies perfectly quiet, but the coronary patient resembles the colic in that he is restless and tosses about. The acute cardiac patient presents veins in the neck which are distended and full, in contrast to the patient with the surgical abdomen who may appear pale and bloodless. Signs of impaired circulation are usually present, such as dyspnea, orthopnea and cyanosis. Auscultation will usually reveal rales in both bases due to pulmonary congestion. Cardiac enlargement, feeble heart sounds and occasionally a pericardial friction rub may be found. During auscultation of the abdomen, normal intestinal sounds will be heard which are absent or diminished in cases of peritonitis.

Positive electrocardiographic findings are pathognomonic, but one is not always fortunate enough to have an electrocardiogram handy. A leukocytosis may be present some hours after the disease takes place, and the urine is usually negative unless there is associated renal pathology.

We realize that many other conditions at times require differentiation in the acute abdomen, among them strangulated herniae, regional ileitis, mesenteric lymphadenitis, mesenteric thrombosis, ruptured ectopic pregnancy, ruptured graafian follicle, ileocecal tuberculosis, vasitis, torsion of the omentum, volvulus, intussusception, etc., etc., ad infinitum. However, when one misses one of these unusual conditions he does not feel quite as responsible or guilty as he would having missed one of the forementioned "Big Six."

Cancer of the Gastro-Intestinal Tract*

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IN THIS presentation the chief emphasis will be placed upon the lower gastro-intestinal tract, namely, the colon. One of the other essayists will devote a period to cancer of the oral cavity and therefore it is not appropriate to discuss this phase of the problem. Since the remaining portion of the field is still very extensive it was thought wise to place most of the emphasis upon the diagnosis and treatment of carcinoma of the colon because of the fact that, first, the majority of these lesions can be diagnosed readily by the physician from a careful history and physical examination and, second, because the results from early surgical treatment of carcinoma of the colon are much better than is the case in some other portion of the tract such as the stomach.

Carcinoma of the Esophagus

Carcinoma of the esophagus should be mentioned briefly because of the great advance which has been made in the management of this distressing disease. Only a relatively short time ago patients who developed carcinoma of the esophagus were considered to be suffering from a hopeless disease. This is no longer true since many of these patients can be diagnosed and a significant number can be cured by proper surgery when it is applied early. The diagnosis of carcinoma of the esophagus is suspected from the history. Patients first complain of difficulty in swallowing solid foods and later have difficulty with soft foods, eventually complaining of difficulty with liquids in the late stages of the disease. When the diagnosis is suspected from the history it can be readily diagnosed by roentgen examination. When the patient is given a swallow of barium it will be seen under the fluoroscope that an obstructing lesion is present. The films which are made also show a filling defect at the site of the tumor. When this evidence is obtained diagnosis can be substantiated by biopsy of the lesion taken through an esophagoscope.

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At the present time some patients with carcinoma of the esophagus are being cured by surgery. It is now possible in a number of instances to remove the portion of the esophagus which contains the cancer and to bring the stomach up into the chest and unite it to the remaining esophagus by an anastomosis. The mortality of this operation is high, however, a patient with carcinoma of the esophagus is certain to die unless his life is saved by surgery.

It should also be pointed out that palliative treatment with x-ray for carcinoma of the esophagus is much more efficacious at the present time than was the case a few years ago. Patients are usually given treatment through several different portals in order that a higher dosage may be delivered to the tumor. Patients may be made more comfortable and their lives prolonged by this type of therapy. It is generally believed, however, that surgery offers the only opportunity of curing any of these patients.

Carcinoma of the Stomach

Cancer of the stomach is a distressing disease because it occurs so frequently and the results of treatment are not as satisfactory as, for example, cancer of the colon and cancer of the lip. There are no absolute criteria for the diagnosis of carcinoma of the stomach. It is important for all physicians to be constantly aware of the possibility of the disease and the possibility should especially be considered when dealing with patients over forty years of age who complain of upper abdominal digestive disturbances. Some patients will complain of only vague digestive disturbances; other patients will complain of pain which is fairly constant or present signs or symptoms of pain which suggest the possibility of duodenal ulcer. The diagnosis may be much easier when a mass is palpable in the epigastrium. X-ray examination of the stomach usually confirms the diagnosis in cases in which carcinoma of the stomach is suspected. The only hope of cure for patients with carcinoma of the stomach at the present time is from surgical removal of the lesion together with an adequate margin of normal tissue on either side of the lesion. It should be pointed out that the results from surgery in the treatment of cancer of the stomach are

not always directly related to the size of the lesion. In some instances a better result is obtained when a large carcinoma projecting into the stomach is removed than when a very small lesion which grossly may resemble an ordinary benign peptic ulcer is removed. This, of course, is because of the difference in the rate of metastases of different lesions.

Malignancies of the small intestine are relatively uncommon but do occur. They usually manifest themselves by symptoms causing obstruction or by loss of blood into the intestinal tract. Malignancies of the duodenum are very rare indeed, however, malignant tumors arising in the duodenum from the ampulla of Vater are not uncommon. Malignant lesions of the small intestine should be treated by surgery as soon as they are diagnosed.

Cancer of the Colon

In considering carcinoma of the colon the problem should be approached under two headings; namely, carcinoma of the right colon and carcinoma of the left colon. The right and left side of the colon differ embryologically, physiologically, and anatomically. The physiologic function of the right side of the colon is to absorb fluids and consequently the contents of the colon on the right side are largely liquid. Because of this fact a tumor of a given size will cause obstruction to occur later on the right side than on the left side of the colon. It is also true that anatomically there is a very definite difference between the ascending colon and the sigmoid colon. The lumen of the colon on the right side is much larger than it is in the sigmoid region and this is another reason why obstruction occurs early with lesions on the right side.

In consideration of carcinoma of the right colon the following points should be emphasized. First, patients are apt to complain of mild digestive disturbances which have few localizing signs. A patient who has become conscious of some change in the abdominal area suggests in many instances the possibility of a tumor in the right side of the colon. An individual who previously has not at all been conscious of his abdominal viscera and becomes aware of these organs should be suspected of having a lesion present in the right side. Second, a change in the bowel habits of constipation to diarrhea or the reverse may suggest a lesion in the right colon. Third, severe secondary anemia and weakness may result from a loss of blood from a tumor in the

cecum or ascending colon. Numerous patients have been found to have carcinoma of the right colon who complain only of weakness and who appear to have severe anemia. Fourth, a mass in the right side may be found by the patient or the physician and this of course makes the diagnosis of tumor of the right colon easier. Fifth, complete obstruction on the right side is very rare, but it does occur. The x-ray examination with barium enema will usually show a constant filling defect with lesions of the right side. Treatment of lesions of the right colon usually consists of excising a portion of the terminal ileum and ascending colon with the performance of an anastomosis between the terminal ileum and transverse colon. Obviously, if a patient comes to the doctor suffering from intestinal obstruction, the intestinal obstruction should be relieved before any consideration is given to removal of the tumor.

Carcinoma of the Left Colon

Carcinoma of the left colon occurs much more frequently than does carcinoma of the right colon. The majority of the carcinomas are found in the rectum and recto-sigmoid region. This is exceedingly important because it means that the majority of these tumors can be felt with the index finger or can be seen with an ordinary proctoscope in the physician's office provided the patient has previously been cleansed with enemas. Emphasis should be placed upon the following factors in establishing a diagnosis. First, the symptoms of carcinoma of the left colon are usually those of acute, subacute, or chronic obstruction. As mentioned before symptoms of obstruction occur much earlier with lesions on the left side of the colon than with lesions on the right side of the colon. Second, progressive constipation is frequently present. If a patient complains of having a progressive decrease in the size of the stools and gives a history of having pencil shaped or ribbon type stools one can be fairly certain of a malignancy of the colon. There may be an intermittent diarrhea. If diarrhea is present it is apt to alternate with constipation. This is a paradoxical type of diarrhea for the body mechanism is attempting to liquify the stool in order to force it through the narrow opening produced by the tumor in the bowel. Third, blood in the stools is an important helpful finding in the diagnosis. If the tumor is quite low the blood is usually red, however, if the tumor is higher the patient may complain of having tarry stools. Fourth, the

general symptoms of anorexia, weight loss, and dehydration which are always present in a very far advanced lesion are not very helpful if these lesions are to be diagnosed at a time when a patient has the chance to be cured.

The history, of course, suggests the presence of carcinoma of the left colon in many instances. A careful physical examination will enable the examining physician to palpate a tumor in the descending colon or sigmoid in a number of instances and in a much higher percentage of cases the examining finger in the rectum will allow the physician to feel the malignancy. It cannot be too strongly emphasized that a careful rectal examination is a vital part of every good physical examination. Tumors which are quite high can often be felt better by examining the patient when he is on the back and when he is straining down so as to push the tumor toward the examining finger.

A satisfactory proctoscopic examination can be carried out on an ordinary table in the physician's office in a high percentage of cases. The patient should have two enemas prior to the time of examination in order to cleanse the lower gastro-intestinal tract. If the patient is asked to get upon the table upon his knees and to place his left shoulder on the table so that he is truly in a knee-shoulder position, then the buttocks project high into the air suspending the rectum and sigmoid. The proctoscope can then be introduced and the bowel examined visually. Care must be taken never to force the instrument when a lumen cannot be seen. With care, in a majority of instances, the rectum can be easily examined provided the physician advances the instrument only when he sees an open lumen. When the tumor is viewed biopsy can be easily accomplished and thus the diagnosis definitely established. X-ray examination by barium enema is very valuable to establishing the diagnosis of carcinoma of the colon. A constant filling defect which is characteristic of the disease will be found in many patients where the lesion is too high to be felt with the index finger or to be seen with the sigmoidoscope.

The general principles of treatment in lesions of the left side of the colon are similar to those elsewhere in the colon. A patient who is

found to have intestinal obstruction as a result of the tumor should have the obstruction relieved first. After the patient is relieved of the intestinal obstruction the carcinoma should be removed surgically provided the patient does not have distant metastases. In some instances the technical procedure is best carried out in stages, whereas, in other instances the operation is done at one sitting.

Summary and Conclusions

1. Carcinoma of the esophagus is now amenable to surgical treatment in many instances where this was previously impossible.

2. Carcinoma of the stomach is still a most discouraging disease because of its high incidence and the relative poor result of treatment. The best opportunity is afforded the patient for relief if the physician is acutely aware of the disease and a diagnosis is made early followed by adequate surgical treatment.

3. Cancer of the right colon and cancer of the left colon should be considered separately because of the anatomical and physiologic variations between the right and left side of the colon.

4. The lesions of the right colon procedure obstruction relatively late whereas lesions of the left colon produce obstruction much earlier.

5. Patients with cancer of the right colon are prone to complain of weakness, anemia, vague digestive disturbances and possibly of a mass on the right side.

6. Cancer of the left colon is usually made manifest by symptoms of obstruction. Such symptoms may be acute, subacute, or chronic.

7. Cancer of the left colon is also frequently accompanied by a history of gross blood in the stools, progressive constipation, and at times by alternating constipation and diarrhea.

8. The majority of patients with cancer of the rectum or recto-sigmoid can have the lesion diagnosed very accurately by palpation with the index finger. Other patients can have the lesions diagnosed accurately from proctoscopic or x-ray examination. Surgical treatment of lesions of the colon when given before distant metastases have occurred offers a relatively good chance of cure to many individuals.

The Use of Procaine During Anesthesia*

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UNTIL 1940, when Lundy first used procaine intravenously for its generalized analgesic action, its intravascular administration was feared and avoided if at all possible because although procaine blocks electrical conduction in peripheral nerves, it stimulates the cerebrum from above downward producing excitement and convulsions followed by collapse. Other toxic reactions are allergic and anaphylactic in nature¹³. Before World War II, one gram was considered the maximum safe total dose for infiltration, but clinical experience in the field altered this value to one gram per hour.

The liver is the principal organ involved in the detoxification of procaine⁸. It causes no significant changes in blood chemistry¹², renal function, or hepatic function⁸.

It has been known for years that following the local infiltration of procaine, there was a depression of the somatic peripheral nerves all over the body. For example, following the local injection of procaine, areas remote to the site of infiltration have an increased pain threshold and a greater pain stimulus than prior to injection is necessary to produce discomfort because the drug is absorbed and distributed by the blood, causing generalized local anesthesia.

This latter property is utilized by administering this drug by continuous infusion in sufficient doses (3-8 gms.) to render surgery painless. Unconsciousness is produced by basal narcosis and is necessary for psychic reasons only.

Small doses of several agents produce satisfactory conditions from a surgical as well as an anesthesiological standpoint without causing the severe depression which would follow the administration of large doses of any one. Thus, the dose of pentothal is reduced by the simultaneous administration of safe percentages of nitrous oxide. Less of each of these is required if small doses of curare are also used. Procaine given in addition will further reduce the necessary dose of each of the other drugs.

Copious sweating during anesthesia may seriously dehydrate the patient. It is usually

due to anoxia, but may occur in the face of satisfactory oxygenation in which case intravenous procaine will block the sympathetic ganglia and stop this loss of fluids and electrolytes.

Procaine reactions from local infiltration are infrequent, and those from intravenous administration are noticeable by their absence.

The treatment of the convulsive phase of a procaine reaction is general anesthesia, preferably by the intravenous administration of an ultra-short-acting barbiturate. Short-acting barbiturates should be included in the premedication of a patient to receive any local anesthetic drug as prophylaxis against cerebral stimulation.

Under general anesthesia, however, procaine reactions are unknown due to the fact that the cerebrum is depressed⁹. During the period 5-30-49 through 2-22-50 I personally administered procaine intravenously during anesthesia 448 times to 227 patients. The average single administration was 73 mg. and the average total dose was 144 mg. In addition twenty patients (some included above as getting intermittent injections) received 1 to 1.2 gm. procaine as a continuous drip in a 1000 cc. 5 per cent glucose in water infusion during anesthesia. It has been my experience that under these circumstances it is an innocuous drug.

Mechanically or chemically stimulated reflexes produce serious and even fatal changes in the circulatory and respiratory physiology during surgery and anesthesia, especially in patients with serious pulmonary or cardiac disease, or during surgery within the neck and thorax.

Vomiting is a vagal reflex often initiated by traction on the abdominal viscera. Coughing, forceful exhalation, and laryngeal spasm are vagal reflexes initiated by irritation of the respiratory tree, pharynx, hilum of the lung, intercostal nerves, etc. 2, 3, 4.

Acute hypotension may be reflexly initiated by traction, especially of the uterus and mediastinal structures. Muscular rigidity and spasm is reflexly caused by stretching muscles, irritating serosal surfaces, and so forth.

Endotracheal intubation or bronchial toilet may cause serious cardiovascular reflexes¹,

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such as extra systoles (auricular and ventricular), delayed conduction time, bradycardia, and ventricular escape as demonstrated by electrocardiography.

A deep plane of general surgical anesthesia depresses many of these reflexes, but also depresses the respiratory and circulatory systems. Therefore, provided the reflexes can be controlled in other ways, patients tolerate surgery and anesthesia best in the lighter planes.

During anesthesia, the intravenous administration of procaine hydrochloride in doses of 100-200 mg. (10-20 cc. of 1 per cent procaine) or the local infiltration of sensitive reflex producing areas such as the hilum of the lung, pericardium, carotid sinus and body, and the celiac plexus prevent or block these reflexes.

Muscular rigidity and laryngeal spasm can be controlled by the intravenous administration of such drugs as d-Tubocurarine chloride in doses of 3-6 mg. Anesthesia is much safer and far less depressing since the introduction of this very valuable drug.

Vagal reflexes are depressed by large doses of atropine or scopolamine⁶. Proper premedication prior to surgery in the sensitive reflex areas should include larger doses than usual of one of these drugs (i. e. gr. 1/75-1/50). This may be supplemented during anesthesia by frequent intravenous administration to prevent or relieve undesirable reflexes.

Epinephrin, smooth muscle stimulants such as pitressin, certain anesthetic agents (notably cyclopropane), anoxia, and mechanical stimulation sensitize the heart to reflex disturbances. The pacemaker wanders from the S-A node into the auricle or to the A-V node. Marked irregularities occur in cardiac rate and rhythm, such as auricular and even ventricular fibrillation, conduction system blocks, ventricular escape, and cardiac standstill.

During open thoracotomies, instillation of 3-5 cc. of 1 per cent procaine directly into the pericardial sac may prevent dysrhythmias and their sequelae.

Procaine sedates the heart. It decreases the hyper-irritability of the conducting system and musculature^{16, 17} depressing receptivity. The result is the return of the pacemaker to the S-A node and thus a regular rhythm and a concerted and effective systole leading to restoration of blood pressure, pulse, and cardiac sounds.

Unexplained elevation or fall in blood pressure should be treated with, among other

measures, intravenous procaine in doses of 50 to 100 mg. Often the pressure returns promptly to normal, indicating that the cause of change in blood pressure is central, that is cardiac, and not peripheral, and is due to reflexes or the action of drugs.

In the early stages of cardiac arrest the heart has not stopped, but its motions are ineffectual in maintaining adequate circulation. We refer to this clinical entity when blood pressure, pulse, and cardiac sounds are not discernible.

This clinical syndrome may occur without warning and we must, therefore, constantly be on the alert for its occurrence in order to treat it in its incipency.

Simple measures at this time will restore an adequate circulation. Resuscitative measures in this emergency must follow a predetermined and rehearsed plan, for SPEED is the most important of the analeptics.

First. Administer pure oxygen by mechanical inflation of the lungs, washing out the inhalation agents being used. Since this is most effectively done through an endotracheal tube, and since time is precious, the routine use of such an airway is strongly recommended. The expansion and collapse of the chest mechanically causes a sluggish flow of blood through the lungs and heart resulting in some degree of oxygenation of the heart.

Second. Place the patient in 10° to 20° Trendelenburg position. Venous return to the heart by gravity is thus enhanced. Any circulation present is directed toward the brain which is unable to survive as little as five minutes of anoxia. Anoxic degeneration of the brain is our prime concern, for many patients have been successfully resuscitated after longer periods of time only subsequently to die from anoxic decerebration or deoxygenation. In such a state of extremis, the esophageal sphincters relax and gastric contents flow into the pharynx. The assumption of this position allows material to collect in the nasopharynx, aiding in the prevention of aspiration into the respiratory tree. Again, an endotracheal tube is of benefit. For this reason, also, the stomach must be emptied by fasting, induced emesis, or aspiration before the induction of anesthesia.

Third. Administer procaine in doses of 300 to 500 mg. (30 to 50 cc. of a 1 per cent solution) intravenously by rapid injection. Veins collapse in the blood-pressureless state, causing venipuncture to be difficult and time consum-

ing when delay may be fatal. Therefore, a freely flowing intravenous infusion through a large calibre needle should be running before induction of anesthesia in every instance. This is strongly recommended. Such a volume rapidly injected will reach the heart even in the absence of an intact circulation⁹.

Fourth. Administer a vasopressor intravenously in a moderate dose, such as ephedrine 25 mg., desoxyephedrine 10 mg., oenethyl 25 mg., or neosynephrin 0.5 mg. This constricts peripheral vessels as well as directly causing an increased cardiac output resulting in a more rapid return of the blood pressure to levels compatible with life.

These four steps should be carried out within one minute of the detection of cardiac arrest. Such drugs should always be in syringes and at our finger tips before induction.

Response to these measures is usually immediate but in case of ineffectiveness further resuscitation should be immediately instituted by: 1) direct mechanical massage of the heart; 2) bathing the heart with procaine; and finally 3) very small doses (0.1 to 0.2 mg.—i. e. 0.1 to 0.2 cc. of 1:1000 solution) of epinephrin injected into the right auricle may be considered. However, this drug may further enhance respiratory and circulatory depression^{9, 14, 15}.

SUMMARY

In addition to being the drug most universally employed to produce regional anesthesia, procaine is of value when used locally or intravenously during anesthesia to: 1) abolish excessive sweating, 2) decrease somatic reflexes, 3) decrease autonomic reflexes, 4) produce generalized local anesthesia, 5) reduce the doses of other anesthetic agents being employed, 6) protect the heart from harmful reflexes, 7) turn homeward a wandering cardiac pacemaker, 8) help resuscitate the heart in cardiac arrest, 9) relieve vascular spasm, 10) relieve muscular spasm, 11) raise hypotensive blood pressure, and 12) lower hypertensive blood pressure. If things go wrong, give procaine.

CONCLUSIONS

Many of the aforementioned difficulties may be avoided by simple preventive measures such as: 1) proper premedication, 2) proper oxygenation, 3) continuous intravenous infusion of procaine, and 4) infiltration of sensitive reflex-producing areas with procaine.

"If the good man of the house had known what hour the thief would come, he would have watched. Be ye therefore ready also." Luke 12: 39-40.

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The Cross-Eyed Child—Surgical Treatment of Non-paralytic Esotropia*

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THE cross-eyed child lives under a severe handicap. Lacking binocular vision, he is unable to achieve those skills which require a high degree of depth perception. Unless he learns to alternate the use of his eyes, that is, to use one and then the other, one loses its useful vision, and he becomes, for most practical purposes, one-eyed. The onset of amblyopia is so gradual that it is usually well-established before either child or parent is aware of it.

The physical handicap is no greater than the social. Other children constantly remind him that he is different from his playmates, and that the difference is in the direction of inferiority. It is easily understandable that many cross-eyed children grow up with the idea that the world is against them, an idea which may lead to antisocial and even criminal tendencies.

This is unnecessary. The vast majority of cases of cross-eyes can be very much improved, if not cured, and, for best results, correction should be started as early as possible.

Because the subject of extraocular muscle imbalance is vast and complex, this discussion is limited to a few generalized statements in regard to the surgical treatment of non-paralytic esotropia, that is, manifest inward deviation of the eyes in which the two eyes retain their relative positions in whatever direction they are turned. The technical aspects of examination and treatment will not be discussed.

The question as to the earliest age at which the child should be seen by an ophthalmologist has caused a great deal of confusion. The erroneous idea that a child may outgrow a tendency to squint has resulted in neglect of many children. For every child who is able to overcome cross-eyes by his own efforts, and that at the expense of useful vision in one of his eyes, there are probably ninety-nine whose deformity only increases. I believe that, as soon as squint is suspected, the child should be seen by an ophthalmologist. One reason for this is to make sure that there is no tumor, such

as retinoblastoma, which is highly malignant and must be removed in order to save the child's life.

As soon as the child is old enough to cooperate at all by fixation, analysis of the defect should be made and corrective treatment started. Because several visits are usually necessary in order to manage these cases properly, the services of an ophthalmologist near the child's home should be utilized unless the parents have more than average financial resources. The age at which the child will cooperate, of course, varies a great deal. Sometimes treatment can be started as young as eighteen months. For best results, it should be started before the child is six years old.

The first step is analysis and measurement of the defect. If the squint is non-paralytic, the deviation will be essentially the same in the six cardinal directions of gaze. If the deviation is greater when the eyes are fixed on a point twenty feet distant than one thirteen inches distant, and the near point of convergence is remote, the condition is one of divergence insufficiency. If the deviation is less with the point of fixation at twenty feet than at thirteen inches, and the near-point of convergence is not remote, then the condition is one of convergence excess. Sometimes the same patient has both convergence excess and divergence insufficiency.

The visual acuity should be determined, if possible. If not, some other means should be used to find out whether the child alternates in the use of the two eyes, or whether one of them is amblyopic.

The child is then examined following cycloplegia by atropine and the refractive error determined. The deviation is measured with the child's eyes atropinized and wearing corrective lenses to determine how much residual deviation is present.

Frequently, all or part of the deviation results from a hypermetropic error of refraction. In these cases, the excessive convergence results from the excessive accommodation required of the eyes for best vision, the functions of accommodation and convergence being linked by central nervous system association centers.

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Corrective lenses are then worn, and, if one eye is amblyopic, the eye with better vision is occluded or atropinized in an attempt to improve the vision in the amblyopic eye.

Mothers are often amazed to find that even very young children wear their glasses eagerly, and that the deformity and vision are improved.

In the case of alternating squint, occlusion is not necessary, but, if the child is old enough, fusion exercises are begun.

Usually the amount of benefit glasses will give can be very nearly predicted at the time of examination under atropine cycloplegia. They should cause improvement within one month, if they are to be at all effective.

After maximal benefit by glasses and orthoptic training has been reached, the treatment of non-paralytic esotropia is surgical.

The advantages of early surgery, between the ages of three and six years, are: immediate cosmetic improvement, less likelihood of amblyopia, more likelihood of normal retinal correspondence, and decreased length of treatment.

The advantages of late operation, near the age of puberty, are that local anesthesia can be used, making fewer operations necessary, and less likelihood of secondary divergence. After the age of puberty, cosmetic improvement should be the most expected from surgery. The advantages of early operation are so great that surgical correction should preferably begin as early as three years, and later deviation, if it occurs, may be corrected during adolescence.

If the esotropia is of the convergence excess type, the operation of choice is recession of the internal rectus muscle of the non-fixing eye in deviations up to fifteen prism diopters. In deviations of fifteen to twenty-five prism diopters, the internal rectus of the non-fixing eye is recessed, and the external rectus of the same eye is resected.

If the esotropia is of the divergence insufficiency type, the operation of choice is resection of the external rectus muscle of the non-fixing eye in deviations up to twelve prism diopters. In deviations of twelve to twenty prism diopters, resection of both external recti should be done. If the deviation is over twenty prism diopters, resection of the external rectus

and recession of the internal rectus of the non-fixing eye should be done. Only the residual squint which remains while the eyes are in a state of cycloplegia should be corrected. This is to prevent a later outward deviation as the amplitude of accommodation decreases with age. The amount of correction that can be obtained from a resection or recession of any given amount is variable. For this reason, over-correction should be avoided, and the parents told that more than one operation may be required before maximum benefit is obtained. Roughly, one millimeter of recession will correct between two and one half and three prism diopters, and one millimeter of resection will correct about two prism diopters of convergent strabismus. If local anesthesia is used, a more accurate estimate of the correction can be made.

Postoperatively, a light dressing is placed on the operated eye, and an ice glove is kept on it the remainder of the operative day. The following day, the dressing is removed, and the patient usually allowed to go home. If absorbable sutures are used, postoperative suture removal is eliminated. The eyes are atropinized and reading is discouraged during the postoperative period.

To sum up, there are usually three steps in the treatment of squint: optical treatment, orthoptic training, and surgery. Practically all cases can be improved cosmetically, at least, if not cured. The earlier treatment is begun, the more satisfactory are the results obtained. The commonly seen cross-eyed child is usually the result of neglect.

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Mesenteric Vascular Occlusion*

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IT HAS been said that mesenteric occlusion possesses four distinct characteristics: 1) It is relatively rare; 2) it is difficult to diagnose preoperatively; 3) it is difficult to treat; and, 4) recovery is most unusual.

The differential diagnosis of mesenteric occlusion still remains highly speculative. Clinicians familiar with this disease are cognizant of its irregular and unpredictable pattern, making early recognition frequently impossible. From the time Tiedeman reported the first case more than one hundred years ago to the time of the more recent reviews by Meyer, Jones, Dye, Whitaker, Pemberton, Fallis, and others, many attempts have been made to establish some reasonable constant symptom complex to use as a basis for diagnosis, but with only a small degree of success. Information gleaned from the relatively few reports in the literature indicate that in the great majority the diagnosis of mesenteric occlusion is made either in the operating room or at the postmortem table. Only through constant reporting of proved cases, repeated reviews of the literature, and keeping ever alert to the possibility of mesenteric occlusion in every abdominal emergency can one hope to increase the incidence of early diagnosis, institute early treatment, and in turn possibly reduce the tremendously high mortality rate in this condition.

Fortunately mesenteric occlusion occurs relatively rarely, but when present the surgeon and clinician are confronted with the most formidable of all abdominal emergencies. The prognosis is grave, even with early diagnosis and treatment, the more significant reports indicating that the mortality rate ranges between 85 per cent and 100 per cent. Klein conducted an exhaustive review of the literature and found that although Elliot performed the first intestinal resection for mesenteric occlusion in 1894, only 24 cases of successful resection had been reported up to 1921. Whitaker and Pemberton reporting a series of 60 cases at the Mayo Clinic in 1938, stated that the over all mortality rate was 95 per cent and of the 19 cases operated upon for mesenteric occlusion

the mortality rate was 85 per cent. McDowell reporting a case of mesenteric thrombosis from the Mayo Clinic, January, 1949, makes this statement: "The prognosis of mesenteric occlusion disease is bad. This is supported by the fact that of the 569 cases reported (in the literature up to 1948) in only 35 (6 per cent) was resection successful, an over all mortality rate of 94 per cent."

In the present paper some of the more common etiological factors are mentioned; clinical manifestations of mesenteric occlusion are discussed; certain recognized points in the surgical management are outlined; and a proved case with recovery following resection is reported.

The etiological factors involved in vascular disease of the mesentery include: 1) heart disease, arteriosclerosis, and thromboangiitis obliterans; 2) infections which may cause thrombophlebitis, such as appendicitis, pelvic abscesses, and peritonitis; 3) hematogenous factors, such as blood dyscrasias, splenic anemia, and polycythemia vera; 4) trauma to the mesenteric vessels; and 5) mechanical factors that result in portal stasis, such as intra-abdominal tumors and cirrhosis of the liver.

It is well to make a diligent search for the etiological factor in each case, however, it is frequently beyond recognition and thus declared not essential to the clinical diagnosis.

Pathology

In describing the pathology of mesenteric occlusion, Boyd states, "The affected portion of bowel is thickened, dark red in color, and soon becomes gangrenous. The limits are usually sharply defined, but the demarcation may be more gradual. The entire bowel wall is stuffed with blood, the mucosa is necrotic and may be ulcerated, the lumen contains thick tarry blood, the serous coat is covered by an inflammatory exudate, the peritoneal cavity contains bloody fluid, or there may be a general peritonitis. The mesentery is thickened and contains large patches of hemorrhage; the mesenteric veins are greatly engorged and the mesenteric glands are swollen and hemorrhagic."

Although there is no characteristic clinical pattern in mesenteric occlusion the following pertinent features are recognized:

*Read by Dr. Davis at the March 8, 1949, meeting of the Northeast Mississippi Medical Society at Corinth, Miss.

1. Mesenteric occlusion occurs more often in males than females and it may occur at any age.
2. The onset of the disease is usually sudden, severe, mid-abdominal pain, either during or shortly after a meal. The pain may be colicky in nature and all out of proportion to physical findings, frequently requiring heavy sedation, often without relief.
3. Vomiting is marked from the onset, but is definitely overshadowed by the severe pain, the reverse of which usually is true in intestinal obstruction, a condition frequently confused with mesenteric occlusion.
4. Shock is usually present in a degree varying with the type of occlusion, it being most marked in cases with superior mesenteric artery occlusion and less dramatic in those cases with venous thrombosis.
5. Constipation is usually present. Blood may be noted in the enema return or on the examining finger, particularly late in the course of events, and is considered a good diagnostic point when found.
6. On physical examination one may note besides shock and dehydration, varying abdominal signs ranging from generalized abdominal tenderness to spasm and rigidity. Occasionally a soft doughy mass may be palpated in the mid or lower abdomen, which is later found to be a thickened coil of intestines.
7. The white blood count is apt to range between 20,000 and 40,000 cells per cubic millimeter.

The picture of mesenteric occlusion varies greatly, but in general we may say that mesenteric occlusion occurs most often in males and may present the following: 1) shock, as seen in acute pancreatitis and coronary thromboses; 2) excruciating pain as seen in a ruptured viscus; 3) repeated vomiting as seen in intestinal obstruction but without abdominal distention or visible peristalsis; 4) localized tenderness and muscle spasm as seen in acute appendicitis or ruptured ulcer.

In the overall picture, we find a patient suffering from an abdominal lesion which simulates, but is not typical, of intestinal obstruction.

Surgical Management

Moore urged abdominal exploration as soon as the patient can be made as safe as possible for surgery. Blood readily available to combat shock in preparation for surgery is paramount—and should be used liberally. Once operative intervention is elected there is little place for conservative measures. Enterostomy, so often used in intestinal obstruction is worthless, and exteriorization is fraught with many dangers. Anything less than intestinal resection when more than a few inches of the gut is involved is most likely to prove fatal. The poor condition of the patient during operation is no argument against radical measures as it has been noted repeatedly that the condition of the patient frequently improves immediately after resection and seems to be much better than immediately before operation. This marked improvement is most likely due to the complete removal of the toxic material contained in the gangrenous bowel.

Resection may range from the removal of a few inches to several feet, depending upon the extent of the vascular occlusion. The most extensive resection reported in the literature to date was performed by Meyer in 1946. The latter case was that of a soldier, nineteen years of age, in which all but the proximal eighteen inches of small bowel, plus the right portion of the colon were removed following acute superior mesenteric artery occlusion and anastomosis between jejunum and transverse colon performed with excellent results.

Recently new drugs have been used as an adjunct to surgery in the treatment of mesenteric vascular occlusion; namely, heparin and dicumarol as anti-coagulants and papaverine hydrochloride as an antispasmodic.

Report of Case

A white railroad switchman, age 50 years, was admitted to the Corinth Hospital as an emergency patient about 8:00 a.m., January 4, 1947, complaining of severe abdominal pain of twelve hours duration. Doctor C. W. Norwood was called to see the patient at this time, and, noting the extreme emergency condition of the case, requested the author to see the patient with him.

The history indicated that the patient had a sudden onset of acute and severe lower abdominal pain while eating the evening meal twelve hours before, followed by prostration and vomiting. Relief was only partial following a hypodermic of morphine about one hour later. The pain continued though less severe

for the next few hours, gradually spreading to the entire lower abdomen with some tenderness in the upper abdomen and associated with repeated vomiting. There was no diarrhea, but rather constipation. No chills, fever, or genitourinary symptoms.

Past History: Past history indicated that the patient had been in relatively good health except for mild recurrent attacks of upper respiratory infections during the past several years, sometimes producing a bronchitis with yellow sputum. During the past ten or twelve years he had smoked one to two packages of cigarettes per day. Approximately ten months prior to P. I. the patient had undergone appendectomy for acute, gangrenous appendicitis with local peritonitis.

Examination revealed a rather thin, moderately dehydrated, white male, of 50 years of age, in moderate shock. He was pale, languid at time; but cooperative and complaining of intense lower abdominal pain. Temperature 98 degrees F; pulse 130; respiration 28; blood pressure 100/70.

There were moderate dental caries with some gingivitis. The pharynx was red but no exudate was noted. There was no glandular enlargement. The lungs and heart were normal to auscultation and percussion. The abdomen was slightly distended and tympanitic and moved very little with respiration. There was diffuse exquisite tenderness, most marked over the lower one-half of the abdomen. Just below the level of the umbilicus could be felt a doughy-like mass, size of two fists, exquisitely tender and dull to percussion. There was diffuse peritoneal irritation as evidenced by rebound tenderness, but no shifting dullness could be made out. Liver dullness was intact and no solid organs were felt. Rectal examination revealed marked generalized tenderness and the same doughy like mass felt, as noted in the lower abdomen. There was no blood noted on the examining glove.

The leucocyte count was 21,000 cells per cubic centimeter and the urinalysis was clear of albumin and sugar.

Because of the sudden onset of severe lower abdominal pain, accompanied by signs of peritonitis and shock and the presence of a mass in the lower abdomen the diagnosis of a ruptured hollow viscus, possibly a ruptured diverticulum and peritonitis was seriously considered. Because of the marked nausea and vomiting, moderate abdominal distention, and the history of appendectomy for gangrenous appendix with peritonitis ten months previous to present illness, the diagnosis of intestinal obstruction was our second choice.

Following preparation of the patient for surgery by blood plasma and glucose solution intravenously, the abdomen was opened under

ether anesthesia, through a right paramedian incision. A moderate amount of thin serosanguinous fluid was found free in the peritoneal cavity. Immediately beneath the incision was noted a large loop of purplish to black, dilated and thickened small intestine. The serosa was dull and exuding a thin serosanguinous fluid. The mesentery was thickened and congested throughout the extent of the involved gut and obscured the blood vessels except at irregular intervals where they appeared distended and thrombosed. Further investigation revealed that the lower ileum was involved from within six inches of the ileocecal valve to a point $4\frac{1}{2}$ feet cephalad. This portion of the ileum was resected including approximately four inches of viable gut on either side of the gangrenous loop and an end to end anastomosis performed. As a safety valve a small de Pezzer catheter was inserted through an enterostomy wound in the cecum, carried through the ileocecal valve into the ileum well beyond the site of anastomosis, so as to relieve undue pressure on the suture line. The catheter was brought out through a stab wound in the right lower quadrant of the abdomen. The abdomen was closed in layers without drainage.

Postoperatively 600 cc. citrated blood were given immediately. The patient appeared to be in much better condition following operation than when taken to surgery.

The postoperative course was smooth, the patient continuing to improve under Wagenseen drainage, penicillin therapy, intravenous fluids, and good nursing care. The bowels moved spontaneously on the fourth postoperative day and the enterostomy wound in the right lower quadrant of the abdomen healed rapidly following removal of catheter on the seventh postoperative day. The patient was discharged from the hospital on the seventeenth postoperative day. During the past two years the patient has been followed at regular intervals and found to be in excellent health. No definite etiological factor has been demonstrated to date.

Comments

In retrospect, I feel that the diagnosis could have been made with some confidence even in the absence of a demonstrable etiological factor, for here was a patient presenting: 1) the picture of shock following sudden onset of severe abdominal pain during meal time, 2) the symptoms of intestinal obstruction as evidenced by the progressive vomiting, constipation, and abdominal distention, and 3) peritoneal irritation as evidenced from the marked rebound tenderness and abdominal pain. The above three factors added to the finding of a

doughy mass in the middle and lower abdomen of a man beyond middle age should have clinched the diagnosis.

In this paper an attempt has been made to reemphasize the fact that mesenteric occlusion should be considered in the differential diagnosis of every acute abdomen. The difficulties encountered in diagnosis and treatment have been discussed and a proved case of mesenteric occlusion with recovery following resection has been presented.

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The Mississippi Doctor

The journal with a vision which encourages a plan of delivering modern medicine to the masses at less cost to the individual and more profit to the practitioner. It champions the community hospital, the hub around which this service must be built.

Entered as second-class matter, January 19, 1926, at the post office at Booneville, Miss., under the Act of March 3, 1870. Annual subscription, \$2.00.

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Editorials

The state program promises to be mighty good this year. Be sure to attend. Every doctor should attend his state meeting if at all possible. It is important from many standpoints. The papers will bring information very valuable, as will the scientific exhibits, and the association with fellow doctors will be helpful and inspiring.

Dr. B. B. O'Mara has made a fine president. He has been cordial, active and full of good cheer. Dr. B. S. Guyton, who has served well as president-elect, has a year before him of great importance. We appreciate the work of the program committee and the work of all who have planned the hospitality.

The banquet for the Fifty-Year Club will be held at the Robert E. Lee Hotel at six o'clock in the Jackson Room on Tuesday, May 9. Dr. Andy Hall of Mount Vernon, Illinois, will be

the guest speaker. It is hoped that all the fifty-year men will attend the Doctors' Day luncheon with the Woman's Auxiliary the same day at the Heidelberg Hotel at 12:30.

We believe Mississippi has a record number of men who have practiced fifty years or more compared with our doctor population. They are a noble band and deserve all praise for the service they have rendered.

The matter of regimentation in medicine backed by government insurance and lay direction is still a problem. Much has been done through the leadership of the American Medical Association, the state medical societies and other forces who love free medicine to inform those who might be misled as to the benefits of government medicine. Our nation is certainly giving better medical service to its people than any other part of the world.

Free medicine thinks deeper and wider and farther. Voluntary insurance is of the greatest importance for the middle class of people. The percapita fund for the indigent puts Mississippi in the lead with a plan that is democratic and fair and keeps intact the patient-doctor relation. It is good economy for all the people to have the best in medicine as nearly as possible. Medical service must stand ready to take care of the sick at any and all times. The medical profession must realize that medical service must be continuous day and night. It may be argued that people are not losing their lives because of their inability to secure a doctor, but they have a right to be secure from fear and suffering. There is too much tendency in the medical profession to have hours from ten to four. It not only provides a loophole for government-medicine protagonists, but it also denies the sacredness of the practice of medicine. We have under construction the very finest hospital system in the nation, but after all medical service must come from the medical profession. A hospital is just as good as the doctors behind it. The demand for traumatic surgery comes chiefly from the highways and the farms. Our hospitals therefore can not afford not to heed serious sickness and emergencies.

SIMS VOLUME PUBLISHED

Woman's Surgeon, by our famous and beloved Dr. Seale Harris, is now off the press. It is published by The MacMillan Company, New York. This book deals with the life and the work of J. Marion Sims, the father of modern gynecology, the surgeon of slaves and

queens. This biography is most fascinating and moves with such interest and rapidity it is hard to lay down. The history, the pleasures and joys, the successes and hardships of this great pioneer gynecologist are graphically portrayed in this book. Between the lines one can feel the warmth of the heart and the bigness of the soul of the author. This book appeals to your heart and your head, your sympathies and your ambitions. Surely every doctor in the Southern states will want to read it.

Current Therapy, edited by Dr. Howard F. Conn and published by W. B. Saunders Company, Philadelphia, is one of the most practical and helpful books we have seen. No practitioner can really afford to be without this second edition handy Bible of therapy up to date. It gives the latest approved methods. The J. A. Majors Company handles this book.

News and Comment

MISSISSIPPI STATE MEDICAL ASSOCIATION

Convention Hall, Jackson, Robert E. Lee Hotel
Tuesday, Wednesday and Thursday, May 9,
10, 11, 1950.

Forty-sixth annual session House of Delegates will meet May 9, 9:00 o'clock a.m.

Mississippi State Pediatric Society, Robert E. Lee Hotel, May 8, 1950.

American Academy of General Practice, Robert E. Lee Hotel, May 8, 1950.

Woman's Auxiliary Society, Heidelberg Hotel, May 8-10, 1950.

Social Hours

May 8, Monday—12 Noon—Jackson Room, Robert E. Lee Hotel. Members Mississippi Branch—American Medical Women's Association.

May 9, Tuesday—7:30 a.m.—Jackson Room—Past-Presidents Breakfast.

Tuesday—12 Noon—Rooms E. and F., Eye, Ear, Nose and Throat Luncheon.

Tuesday—6:00 p.m.—Jackson Room—Fifty-Year Club Dinner.

May 10, Wednesday—12 Noon—Jackson Room—Past-Presidents Luncheon.

Wednesday—12 Noon—Rooms E. and F.—Obstetrics and Gynecology Luncheon.

Wednesday—6:00 p.m.—Rose Room, Heidelberg Hotel. Social Hour—Victory Room, Heidelberg Hotel. Dinner Dance.

GENERAL MEETING—FIRST DAY

Tuesday, May 9, 1950—Session 1:30 p.m. to 6:00 p.m. Convention Hall—Robert E. Lee Hotel.

Call to Order—President B. B. O'Mara, Biloxi.

House of Delegates—Convention Hall, 9:00 a.m. Stanley A. Hill, Corinth, Presiding.

Invocation—Rev. Seth Granberry, Jackson.

SECTION ON PEDIATRICS

Lamar Arrington, Chairman, Meridian

Tuesday, May 9, 1950—Convention Hall, Robert E. Lee Hotel—Session 1:30 p.m. to 6:00 p.m.

1. Allergic Diseases in Infants and Children—Vida H. Gordon, Little Rock, Ark.

2. Pediatric Emergencies—C. E. Ward, Jackson. Discussion to be opened by Lamar Bailey and Guy Vise.

3. Blood Coagulation and Hemorrhagic Disease in Infants and Children—Arthur A. Caire, III, New Orleans, La.

4. Clinical Experiences with Childhood Poliomyelitis in 1949—Guy C. Jarratt, Vicksburg, and L. G. Horn, Vicksburg. Discussion to be opened by Harvey Garrison, Jr., and A. L. Gray.

5. Urological Diseases in Children—Frank Ramsay, Laurel; J. U. Morrison, Laurel; and C. R. Gillespie, Laurel. Discussion to be opened by Temple Ainsworth and Junius Slaughter.

6. Advances in the Treatment of Infectious Diseases—L. L. McDougal, Tupelo. Discussion to be opened by Harvey Garrison, Sr., and E. W. Eberling.

7. Some Modern Concepts in the Treatment of Meningitis—Virginia Small, Greenville. Discussion to be opened by Ruth Burroughs and Mary Clark.

SECTION ON EYE, EAR, NOSE AND THROAT

Hugh H. Johnston, Chairman, Vicksburg

Tuesday, May 9, 1950—Session 1:30 to 6:00 p.m. Rooms G. and H., Third Floor, Robert E. Lee Hotel.

1. Nose Bleed and Its Management—O. E. Hallberg, Rochester, Minn.

2. The Surgery of Glaucoma—Alston Callahan, Birmingham, Ala.

3. Deep Infections of the Neck—C. M. Murry, Oxford. Discussion to be opened by Verner Holmes and Earl W. Green.

4. The Phorias—L. D. Abernathy, Jackson. Discussion to be opened by W. L. Hughes and Dewitt Hamrick.

5. The Function of the Ear in Health and Disease: a sound motion picture.

EVENING SESSION—EIGHT O'CLOCK

G. G. Townsend, Presiding

Tuesday, May 9, 1950—Convention Hall, Robert E. Lee Hotel.

1. Invocation—Dr. Girard Lowe, Jackson.
2. Addresses of Welcome: On Behalf of the City of Jackson—Commissioner D. B. Sharron.
3. Response to Addresses of Welcome—E. LeRoy Wilkins, Clarksdale.
4. Socialized Medicine—Records.
5. President's Address—The Present Crisis and Our Duty—B. B. O'Mara, Biloxi.
6. Distinguished Doctor's Oration—J. P. Wall, Jackson.

SECTION ON SURGERY

George H. Martin, Chairman, Vicksburg

Wednesday, May 10, 1950—Convention Hall, Robert E. Lee Hotel—Session 9:00 a.m. to 1:30 p.m.

1. The Acute Abdomen: A Diagnostic Emergency—E. A. Trudeau, Biloxi. Discussion to be opened by C. H. McCall and E. R. Nobles.
2. Retropubic Prostatectomy—Lantern Slides—O. P. Myers, Jackson. Discussion to be opened by R. F. Sharp and R. L. Mayer.
3. The Acute Pancreas—Joseph McKinnon, Vicksburg. Discussion to be opened by Wm. Quinn and Geo. F. Archer.
4. The Treatment of Cancer of the Head and Neck—R. Lee Clark, Jr., Houston, Texas.
5. Tumors of the Mediastinum—Geo. E. Twente, Jackson.
6. Suppurative Diseases of the Lungs and Bronchi—Duane Carr, Memphis, Tenn.
7. Discussion Period—an opportunity to present written questions to Drs. Clark and Carr.

SECTION ON HYGIENE AND PUBLIC HEALTH

D. V. Galloway, Chairman, Jackson

Wednesday, May 10, 1950—Session from 9:00 a.m. to 12:30 p.m. Victory Room, Heidelberg Hotel.

Symposium on Degenerative Diseases

1. What the General Practitioner Needs to Know About Rheumatoid Arthritis, Including Some Remarks on Cortisone and Acth—Euclid M. Smith, Hot Springs, Ark.

2. Cancer Control: The Next Goal in Preventive Medicine—Felix J. Underwood, Jackson. Discussion to be opened by A. L. Gray, and N. C. House.

3. The Prevention of Heart Disease—T. E. Wilson, Jackson. Discussion to be opened by Andrew Hedmeg and O. G. Eubanks.

4. Care of the Cancer Patient in General Practice (kodachrome slides)—Robert Lee Brown, Emory University, Ga.

SECTION ON OBSTETRICS AND GYNECOLOGY

Joe P. Evans, Chairman, Gulfport

Wednesday, May 10, 1950—Session from 2:00 p.m. to 6:00 p.m.

1. Pathology of Abnormal Uterine Bleeding—R. A. Street, Jr., Vicksburg. Discussion to be opened by Claude Callender and Carter O'Ferrell.
2. Common Gynecologic Problems (lantern slides)—W. L. Stallworth, Columbus. Discussion to be opened by J. F. Lucas and G. T. Pearson.
3. Handling of Infertility Cases—Walter Simmons, Jackson. Discussion to be opened by R. B. McLean and W. R. Bethea.
4. Practical Pelvimetry—E. A. Melvin, Gulfport. Discussion to be opened by Sam Levi and Joe P. Evans.
5. Unusual Complications in Obstetrics—E. Lee Dorsett, St. Louis, Mo.

SECTION ON MEDICINE

T. E. Wilson, Chairman, Jackson

Thursday, May 11, 1950—Sessions from 9:00 a.m. to 12:30 p.m.

1. Etiological Factors in Headaches—M. L. Golden, Laurel. Discussion to be opened by J. R. Simms and Frank Donaldson.
2. Anticoagulant Therapy—James J. Lewis, Columbus. Discussion to be opened by J. P. Tatum and W. K. Purks.
3. Treatment of Primary Atypical Pneumonia with Chloromycetin—A Preliminary Report—W. W. Lake, Pass Christian. Discussion to be opened by J. F. Eckford and C. C. Thompson, Jr.
4. Recent Advances in Therapeutics—W. C. Thompson, Jackson. Discussion to be opened by C. W. Emerson and F. M. Acree.

5. Management of the Patient with Hypertension—Mark S. Dougherty, Atlanta.

6. Management of Acute Renal Insufficiency with Particular Reference to Internal Lavage—J. Edwin Wood, Charlottesville, Va.

AMERICAN ACADEMY OF GENERAL PRACTICE—MISSISSIPPI CHAPTER

Second Annual Assembly
and
First Scientific Meeting
May 8, 1950

Convention Hall, Robert E. Lee Hotel, Jackson

2:00 to 2:40 p.m. Is Carcinoma of the Cervix and Cervical Stump Preventable?—James Roland Reinberger, Memphis, Tenn.

2:45 to 3:25 p.m. New Developments in Therapy and Diagnosis—Lyle Motley, Memphis, Tenn.

3:25 to 3:40 p.m. Intermission.

3:40 to 4:30 p.m. The Acute Abdomen—R. L. Sanders, Memphis, Tenn.

7:00 p.m. Banquet, Entertainment, Dancing, Convention Hall.

MISSISSIPPI PEDIATRIC SOCIETY

Robert E. Lee Hotel
Monday, May 8, 1950

2:00 p.m. Gastro-Intestinal Allergy in Infants—Vida H. Gordon, Little Rock.

Ophthalmology Conditions Frequently Seen in Children—Stirling S. McNair, Jackson.

Congenital Hemolytic Anemia—Arthur A. Caire, New Orleans.

Members of the Mississippi State Medical Association are invited to this session.

7:00 p.m. Dinner—Jackson Room, Robert E. Lee Hotel. Members Mississippi State Medical Association invited.

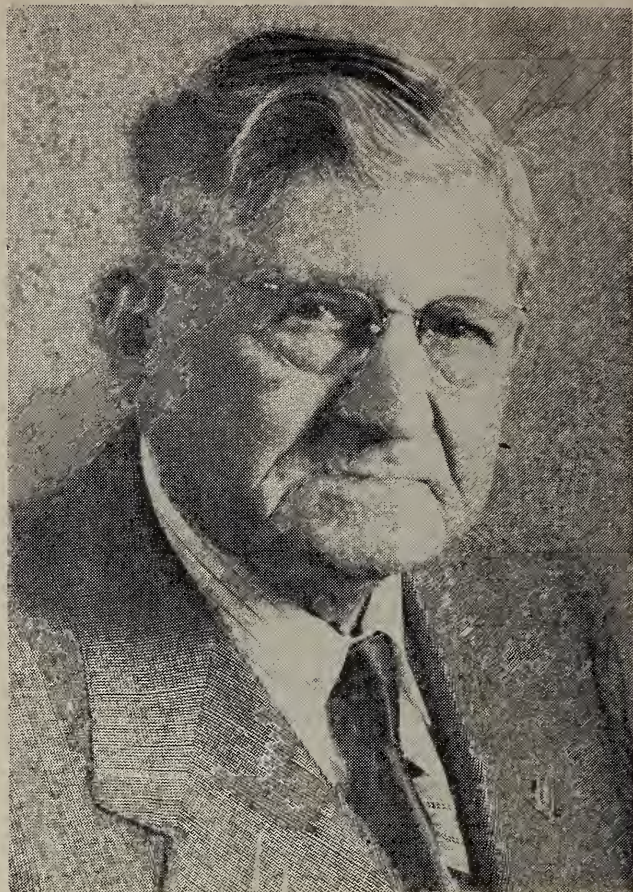
MEDICAL EXAMINATION NOTICE

The Mississippi State Board of Health will hold medical examinations on June 20 and 21, 1950, in Jackson, Mississippi, Edwards Hotel, Convention Hall, Mezzanine floor.

Examination may be taken on the first two years only on June 20; on all four years June 20 and 21; or on the last two years June 21 for those who have passed the first two years before this Board.

For application blank and other information write to: Dr. R. N. Whitfield, Assistant Secretary, State Board of Health, Jackson 113, Mississippi.

FIFTY-YEAR CLUB SPEAKER



Dr. Andy Hall of Mt. Vernon, Ill., the outstanding general practitioner for 1950, will address the Fifty-Year Club Tuesday evening, May 9.

Dr. Andy Hall was born January 8, 1865, on a farm in Flanagan Township, Hamilton County, Illinois, the eighth of nine children of Lieutenant Colonel Hiram Wesley Hall and his wife, Mrs. Julia McLean Hal, a family with an honored and impressive lineage.

Andy Hall was graduated from Northwestern in 1890. When he began to seek a site for his office, he rejected McLeansboro as overcrowded with physicians and chose instead the town of Mt. Vernon in adjoining Jefferson County. It had fewer than 4,000 population, but the 25-year-old tyro decided that the new factory would bring new population, from which he might build a practice. The factory, still operating, is now one of the largest in the country, and Dr. Andy's practice has grown with it and the town, just as he planned it 60 years ago. Mt. Vernon now has 20,000 population and is clean, well-organized and well administered, close to the soil, but with diverse industry, and Dr. Hall is given great credit for making it what it is.

His gifts as a public speaker are great. He

is the favorite orator on all public occasions, in his home community and his skill as a story-teller makes him the center of attraction in every gathering. The Fifty-Year boys feel that they have a great treat in store.

TIPPAH COUNTY HOSPITAL OPENED

The dedication and formal opening of the Tippah County Hospital was held Friday, April 21, at two o'clock p.m., Doctor Felix Underwood, executive director of the Mississippi State Board of Health, being the principal speaker for the dedication program.

LECTURE SERIES ON MEDICAL CARE IN THE SOUTH

Students in the School of Medicine of Emory University have felt for some time the need for more information concerning various aspects of medical care, particularly in the South. Accordingly a series of informative lectures on various aspects of health needs in the South has been arranged through the cooperation of the Emory University Lecture Series Committee. An outline of the program is given below:

Monday, April 24, 1950, 8:15 p.m.—The History and Present State of Medical Care in the South, Dr. Cecil Sheps, Associate Professor of Public Health Administration, University of North Carolina Medical School.

Wednesday, May 3, 1950, 8:15 p.m.—Hospital Resources of the South, Dr. Glen Usher, Executive in Hospital Resources Board of the U. S. Public Health Service; Dr. Tully Blalock, Chairman of the Georgia Committee for the Study of Hospital Resources.

Tuesday, May 9, 1950, 8:15 p.m.—Problems in Physician Distribution and Types of Medical Practice in the South—Dr. Milton I. Roemer, Yale University School of Public Health; Dr. H. B. Makover, U. S. Public Health Service, who has made recent survey on Group Medical Practice.

Thursday, May 11, 1950, 8:15 p.m.—The Future of Medical Care in the South—Dr. W. Wing, Associate Professor of Public Health, Johns Hopkins School of Hygiene and Public Health; Dr. Charles Wilkinson, Former Director, Division of Medicine, the Kellogg Foundation.

ANNOUNCEMENT

Dr. L. Henning Mayfield announces the opening of offices for the practice of surgery and proctology at 1053 Madison Avenue, Memphis, Tennessee.

OFFICERS OF NEW FIRM MERCERE-STOVER, INC.



Left to right: Wm. T. Stover, Harold B. Collins, and E. L. Mercere.

On April 1 Mercere-Stover, Inc., was formed by the combining of the surgical department of E. L. Mercere, Inc., with the Wm. T. Stover Co., Inc., of Little Rock, Ark. The officers are Wm. T. Stover, president and general manager, Harold B. Collins, vice-president, E. L. Mercere, treasurer and Wm. C. Kehoe, secretary.

The firm of Mercere-Stover, Inc., will serve this entire trade area with physicians, hospitals, Keleket x-ray supplies and equipment.

The new firm will construct a two-story and basement building of 21,000 square feet near the Memphis Medical Center area. This building will be ready for occupancy by early fall and in the meantime business will be conducted from the Mercere Building at 99 S. Second St., Memphis.

The Wm. T. Stover Co., Inc., of Little Rock will also continue its present surgical and x-ray operations. As Mr. Stover states: "We are combining the surgical divisions of the two firms in Memphis to give the finest possible service to the medical and hospital professions of the mid-South. The new firm will employ about 50 persons, most of them college-trained specialists in this particular field of endeavor."

E. L. Mercere, Inc., noted for over three-quarters of a century for service to the dentists with supplies, equipment and dental laboratory facilities, will now devote all efforts to serving the dental profession exclusively.

Interpreting Medical Literature

Staff of Review

Dermatology—James G. Thompson, Jackson
 Otolaryngology—Charles R. Hume
 Ophthalmology—Edley Jones, Vicksburg
 Obstetrics and Gynecology—J. F. Lucas, Greenwood.
 Orthopedics—Thomas H. Blake, Jackson
 Public Health—Felix J. Underwood, Jackson
 Pediatrics—Harvey F. Garrison, Jackson
 Radiology and Roentgenology—Karl O. Stin-gily, Meridian.
 Pathology—R. M. Moore, Vicksburg
 Surgery—W. H. Parsons, Vicksburg
 Urology—Temple Ainsworth, Jackson

PEDIATRICS

TWO DIFFERENT TYPES OF ANEMIA IN TWINS FED WITH GOAT'S MILK — Willy Tangheroni and Giovanni Perotto, University of Pisa, Italy, Riv. Clin. pediat. 45:540-51, September, 1947.

"Female twins, presumably not identical, were fed goat's milk between 2 and 7 months of life. Both were normal until 5 months, at which time pallor and diminished activity constituted the presenting complaints. At 7 months of age both were studied completely. In the first red cell count was 1.62 million, with a volume index of 1.09, 9,800 nucleated red cells including proerythroblasts and 35 per cent hemoglobin. There were 98,000 platelets per cubic millimeter. The bone marrow revealed

arrested red cell maturation with basophilic erythroblasts predominating. The infant also demonstrated splenomegaly, hepatomegaly and purpura. The picture conformed closely to the classic goat's milk anemia, with 3.04 million red cells, 45 per cent hemoglobin and a volume index of 0.60 with no immature forms. Both improved on a diet of cow's milk and cereal, with iron and liver supplements."

COMMENT: It has been considered for many years that babies fed on goat's milk would become anemic. It has not been our experience that this is true; however it is my practice not to keep children on goat's milk too long; in fact, I rarely ever feed it except in allergic conditions. It is well known that many children between the ages of 5 and 10 months become rather anemic. It seems that this is more or less a transition period from milk feedings to more substantial blood building foods to which the baby has not been accustomed and of which it is very much in need at this age. Therefore, it isn't anything very unusual for babies to become slightly anemic at this age. Of course, in our present way of pediatric practice, we begin to feed babies much earlier than 5 months; in fact, 2 and 3 months now; therefore it seems that under the circumstances, it would be a little out of order to consider that these babies were anemic on account of goat's milk alone.

Announcing the opening of the first complete summer camp in the South for

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The Sweeney Camp for Diabetic Children Gainesville, Texas

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Information upon request — Address:

James V. Campbell, Camp Director, Gainesville, Texas

or

J. Shirley Sweeney, M.D., F.A.C.S., Medical Director, Gainesville, Texas

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GAINESVILLE, TEXAS

State Board of Health

Felix J. Underwood, M.D.

PUBLIC HEALTH ASPECTS OF ATOMIC ENERGY*

by

Roy J. Morton

Leader, Waste Disposal Research Section
Health Physics Division,
Oak Ridge National Laboratory
Oak Ridge, Tennessee

In order to speak definitely yet briefly of the relationships of atomic energy to public health we must first define and delimit the scope of the discussion. Our subject is stated in general terms and is very extensive. It could be interpreted to include many details concerning radioactivity from either natural or artificial sources; and any present or prospective benefits or hazards to human health that might be attributed to atomic energy. We might logically speak of the benefits and public health implications that are apparent or expected from the use of radioisotopes in medical research, diagnosis, and treatment; and just as logically we might discuss the relatively old and familiar hazards of x-rays or of radium as used in hospitals and clinics, in industry, and increasingly in offices and commercial establishments.

Undoubtedly, as the peacetime uses of atomic energy expand, state and local health officials will be more and more concerned with the administrative aspects of radiation protection and with the inter-relationships of public health departments and other agencies that have various degrees of responsibility for the prevention of radiation hazards. Potential hazards from unusual or emergency occurrences are not being ignored but deserve much further study and discussion. There are many uncertainties as to the nature and extent of health problems that might conceivably develop in connection with accidents, fires, or natural catastrophes in which radioactive materials are involved; and as to the safeguards that can be made effective locally to obviate such emergencies. Within the scope of our sub-

ject we might even speculate on the technical and administrative problems with which state and local health departments may be faced in programs of civil defense in the event radioactive materials are ever used against us by enemies in sabotage or actual warfare.

Public health is very broad and diversified in its interests, responsibilities, and functions. It must accomplish its overall purpose of protecting and promoting human health through the combined efforts of many specialists, both within and outside of official health departments. For effective and truly preventive work, the worker in a public health department requires a variety of specific and general information. In addition to familiarity with his own and related parts of the health department program he must be aware of new developments which may create or intensify public health problems; and he must be informed concerning the efforts of non-public health agencies that are or may be directed toward the solution of such problems.

From this viewpoint, the implications of atomic energy activities and particularly the recent development of large scale nuclear fission operations should be of interest to everyone engaged in public health work. It seems doubtful that the majority of health departments, especially local health departments, will be affected by these activities at the moment or for some time to come. Future expansion of the operations and increasingly wide use of the products, the radioisotopes, may change this situation. Before this occurs it is important that we should obtain as much information as possible and be prepared to meet or forestall difficulties.

Much published material is now available including the semiannual reports of the Atomic Energy Commission (AEC) which review various aspects of the production and research program of the Commission and its contractors. The July, 1949, report, entitled "Atomic Energy and the Life Sciences," was devoted largely to problems of biology and medicine and to research programs looking to the solution

of such problems. In recent months published papers, reports of meetings, and articles in professional journals have appeared; and published bulletins on a variety of subjects more or less directly related to public health are available from the Oak Ridge and Washington offices of the AEC. A paper by A. E. Gorman and Abel Wolman on "Some Public Health Problems in Nuclear Fission Operations" published in the April, 1949, issue of the *American Journal of Public Health* includes many details which are pertinent to our discussion today.

My purpose in this paper is to speak primarily of the unique public health problems that are incidental to the atomic energy developments of the past ten years and to the present program of the AEC and its associated projects. This will include a brief review of the nature of radioactive materials and associated health hazards, the problems of radioactive waste disposal, and the program of waste disposal research now in progress at the Oak Ridge National Laboratory.

Recognition of Health Problems in the Atomic Energy Industry

From the inception of the atomic energy projects, nuclear physicists, chemists, engineers, and management have emphasized the necessity for adequate controls and protection against radiation hazards both in and beyond the operating areas. High standards of protection against these hazards have been maintained even when it required expensive emergency measures to do so. Instruments and technicians for radiation measurements, continuous survey and monitoring services, standards of safety and personnel protection, and maximum limits of air and water contamination were developed quickly and used with large factors of safety. It has been proved that, with proper precautions, radioactive materials can be handled safely even in large quantities as attested by the fact that thousands of people have been engaged on the plutonium projects (meaning Oak Ridge National Laboratory, Argonne National Laboratory, and Hanford Works) for years without anyone being injured by radiation insofar as can be determined from millions of meter readings and from frequent medical inspections.

The practice of health physics—a new profession—has evolved as a specialty in matters of radiation protection. On atomic energy projects the health physics divisions are responsible for the safety of operations involving radiation and radioactive materials. They conduct survey-

monitoring and research programs designed to prevent any conditions of radiation exposure that might possibly cause health hazards. Although up to the present most of the work of health physicists has been on AEC projects they are now increasingly employed in hospitals and research institutions that handle radioactive materials. It seems logical that they will soon find their place on the staffs of public health departments that expect to do appreciable amounts of work and consultation in connection with specific radiological problems.

The range of health problems created or accentuated by atomic energy developments is very broad and involves practically all branches of public health. However, from the very nature of nuclear fission phenomena and operations, the protection of people from radiation hazards must be based largely upon environmental health controls which is the special field of sanitary engineering. In general, the basic principles of sanitary engineering are applicable, but additional special knowledge and techniques are needed for the sanitary engineer to work most effectively in this field. Moreover, he must join closely with health physicists and other specialists who are trained and experienced in nuclear physics and he must depend upon them for the actual solution of many technical problems with which he will be faced. The health problems associated with the production, study, and use of radioactive materials are unique in many respects and are relatively unfamiliar to most people, even to a great majority of those in the technical professions.

Nature of Radioactive Materials and Associated Health Hazards

The field of nuclear physics is relatively new and knowledge of the phenomena of radioactivity is far from complete. Natural radioactivity in uranium and radium was discovered in 1896 and 1898 respectively and in other materials at later dates. Altogether there are some fifty naturally occurring radioisotopes in our earth's surface, the amounts of which differ widely in different places. In recent years the amounts of radioactivity to be dealt with have been increased enormously by the manufacture of hundreds of new radioisotopes in accelerators and especially in the more efficient and prolific chainreacting piles or reactors. In these atom smashing machines the desired isotopes, new elements, and various fission products are produced. Many of these new materials are very highly radioactive although in a majority the activity is short-lived. The

half-life is defined as the time required for a radioisotope to reduce to one-half its radioactivity by decay. The half-life of different radioisotopes varies from a matter of microseconds to millions of years.

A tremendous amount of research has been done and is continuing to gain knowledge of radioactivity and of the properties, behavior, and effects of the various radioisotopes. The physical and chemical properties of these materials are now fairly well understood by specialists in the atomic energy field and it is well known that undue exposure to the energy radiations of radioactive materials is damaging to living tissues. Unfortunately, present knowledge of the mechanism by which radiation harms living tissues is still quite inexact and the factors involved are very complex and difficult to define. Our knowledge of the effects of radiation is based largely upon medical and biological experience with x-rays and with radium and upon experimental work with animals. Available knowledge about the effects of radiation and the maximum permissible exposure of people has been summarized in a number of publications and reports by the Atomic Energy Commission and other agencies.

The health hazards from radioactive materials are due to the fact that the nuclei of their atoms which are unstable tend, sooner or later, to change to a stable form. In so doing they give off ionizing radiations—particles or rays of high energy. Each such readjustment of the nucleus of an atom is known as a disintegration. The radiation is able to penetrate solid matter to a greater or less degree and may have detrimental effects upon living tissue. Parts or all of the body may be affected either by external radiation or from internal exposure to radioactive products taken into the body. Radioactive products enter the body by inhalation, ingestion, and through the skin. They are eliminated principally by way of the feces, urine, perspiration, expectoration, and exhaled air. It is well known that people are subject continually to a low level of radiation from cosmic rays and from the natural radioactive products contained normally in the human body; and occasionally higher exposures occur as from diagnostic x-rays, shoe-fitting fluoroscopes, and various other sources. The objective of health physics is to prevent any exposure which might cause undesirable effects when added to the radiation to which people are ordinarily subjected.

A common unit of radioactivity is the curie (c) which is based upon the number of radioactive atoms that disintegrate in an interval of time as determined by some type of counting instrument. One curie is arbitrarily taken as thirty-seven billion disintegrations per sec-

ond and approximates the amount of radioactivity of one gram of radium. A microcurie is one millionth of a curie or thirty-seven thousand disintegrations per second. The curie is a convenient measurement for monitoring purposes since it indicates the amount of radioactive material present. Other units such as the roentgen (r) and the roentgen equivalent physical (rep) indicate the amount of energy absorbed per unit of mass and in living tissue this appears to be related to the death of cells.

In setting permissible limits for external and internal exposure, standards are based upon the amounts of different kinds of radiation that an individual can withstand indefinitely without apparent injury; and then a factor of safety of ten or more is included. The National Committee on Radiation Protection has been active for more than twenty years. Tolerance limits have been the subject of constant study and occasional revision, generally toward more conservative values. The quantities that are involved and which we must measure are extremely small. For example, the present maximum permissible limit of radioactivity in drinking water, and which is maintained in the Clinch River below Oak Ridge, is 10^{-7} microcuries per cubic centimeter—or in other words one tenth millionth of a millionth of a curie per cc.

It is not easy to comprehend the enormous increase in the magnitude and complexity of radiation problems that has resulted from the successful operation of a production pile. In the past fifty years in the whole world only about two and one-half pounds of radium have been isolated. In an operating nuclear reactor, radiation equal to that from hundreds of tons of radium may be given off. Radioisotopes by irradiation of various materials and numerous radioactive fission products are produced within the reactors. Persons in pile buildings are adequately protected from these radiations by the concrete shields surrounding the pile; and great care is taken to prevent the escape of radioactive materials into the work areas or the outside atmosphere. To remove the enormous amount of heat that is generated, water or air is circulated through the pile and the constituents of the water or air thus exposed also may become radioactive and must be disposed of in a safe manner. Also removal from the pile or reactor, the valuable radioactive materials must be separated and treated by various chemical and other processes, again with special measures to protect workers and to prevent the escape of dangerous radioactivity in waste materials.

(To be concluded in next issue)

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UNION COUNTY UNIT ORGANIZES

The doctors' wives of Union County were called together at the hospitable home of Mrs. H. N. Mayes early in April and organized a local unit to the Northeast Mississippi Auxiliary. The following are officers of the group for the coming year:

Mrs. C. M. Roberts, president; Mrs. H. P. Boswell, Jr., vice-president; and Mrs. D. M. Pennebaker, secretary and treasurer

The members made plans for future programs, after which they were served a delicious party menu by their hostess, Mrs. Mayes.

PROGRAM OF ANNUAL CONVENTION WOMAN'S AUXILIARY

to the

Mississippi State Medical Association

Heidelberg Hotel, Jackson

Monday, May 8—8 p.m. Executive Board Meeting.

Tuesday, May 9—8:30 a.m. Registration.

9:00 a.m. General Session—Mrs. Augustus Street, Presiding.

Invocation—Dr. Girard Lowe.

Address of Welcome—Mrs. I. C. Huggins, Jackson.

Response—Mrs. C. C. Hightower, Jr., Hattiesburg.

In Memoriam—Mrs. V. B. Philpot, Holly Springs.

Report A.M.A.—Mrs. J. K. Avent, Grenada.

Report S.M.A.—Mrs. Harvey Garrison, Sr., Jackson.

"Nursing Education in Mississippi"—Miss Christine Ogelvee, Director, Dept. Nursing, University of Mississippi.

Luncheon—12:30 State Doctor's Day—Special Guests, all doctors of Medical Association Convention. Speaker, Dr. Ralph Jocelyn Campbell, formerly of Great Britain.

Wednesday, May 10—7:30 a.m. Past-Presidents' Breakfast, Mrs. J. K. Avent, Hostess.

8:30 a.m. Registration.

9:00 a.m. General Session.

Invocation—Mrs. H. C. Ricks, Jackson.

Reading of Minutes.

Announcements, Convention Entertainment Chairman, Mrs. W. F. Hand, Jackson.

Officers Reports.

Auxiliary Reports.

Councilors Reports.

Greetings from President B. B. O'Mara, President-Elect, B. S. Guyton.

Report of Nomination Committee.

Election of Officers-Delegates to National Convention.

President's Address.

Resolutions Committee—Courtesy Resolution. Adjournment.

Luncheon 12:30—Honor Guest, Mrs. Arthur A. Herold, Pres.-Elect, W.A.A.M.A.

Introduction and Installation of Officers.

Presentation of President's Pin.

Adjournment.

2:30 p.m. Post Convention Board Meeting, Mrs. W. H. Anderson, Presiding.



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